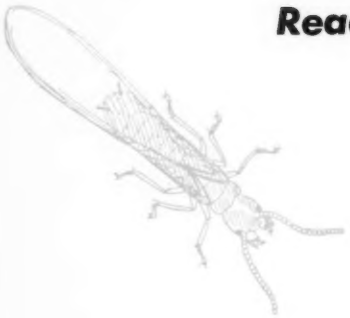
PEST CONTROL

FEBRUARY 1960



Ready for Spring Demand to

Control Wood Pests?

This month's issue gives you help on

FUNGICIDES - BASEMENT PRETREATS - ROTS

Practical recommendations for PCOs on how to use
Fungicides . . . Pg. 9

Applying chemicals during construction
Saves Pretreat Trips . . . Pg. 23

Koppers searching for relationship between
Termites and Fungi . . . Pg. 26

Contractors' opinions of pretreat requirements
A Builder Speaks . . . Pg. 32

Kansas State expert explains current methods of
Grain Pest Detection . . . Pg. 35

Monthly Magazine of Methods, Chemicals, and Equipment for Urban and Industrial Pest Control and Sanitation Since 1933

SUBURBAN PEST CONTROL PR
WITH 1 TRUCK, 1 MAN

J. Webster Haywood (left) and John W. Quinn, Partners in Suburban Pest Control Company, examine architect's drawings of units in the Capehart Housing Project, Ft. Belvoir, Virginia.

"We chose a 1% Chlordane solution because of long positive protection, the safety factor, and economy."

. . . John W. Quinn and J. Webster Haywood, Partners, Suburban Pest Control Company, Hyattsville, Md.

Suburban PEST CONTROL COMPANY
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Chicago 11. Illinois

Gentlemen:

This partnership was formed in 1954 and we feel we have made great strides for such a short time.

We presently are engaged in pre-treating 618 units at the Capehart Housing Project located at Fort Belvoir, Virginia.

Of the several insecticides which were acceptable to the government we chose to use a one percent Chlordane emulsion. Why? Because of the long positive protection we have observed over the years, the safety factor, and of course the cost.

We have converted a 1250 gallon tank truck for our operation at the site and this has resulted in a one man operation.

We plan to use this same procedure in pre-treating three maintenance buildings under construction at Andrews Air Force Base, Camp Spring, Maryland.

Very truly yours.

John W. Quinn, Partner

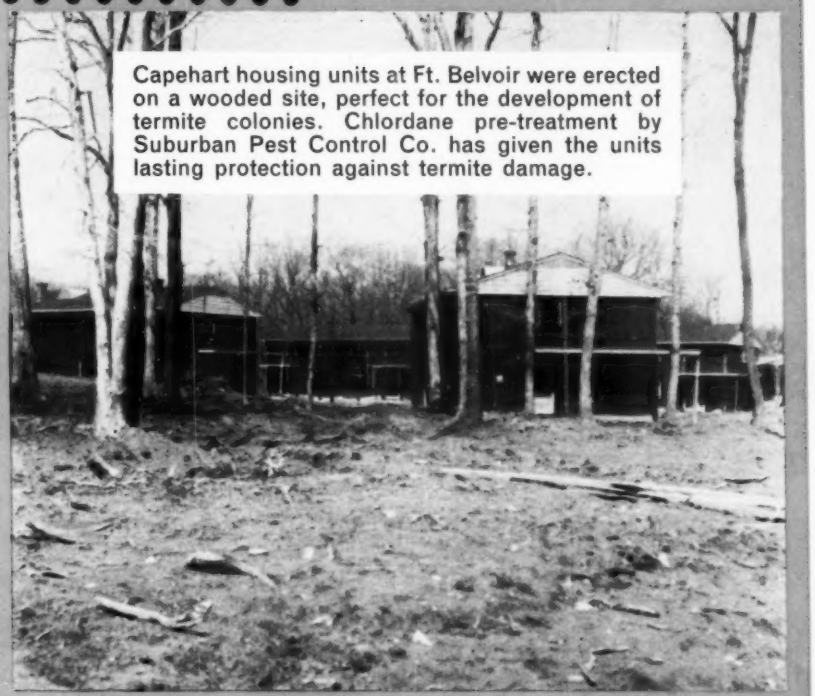
J. Webster Haywood, Partner

JWH/dsh

This 1250 gallon oil tank truck was converted for pre-treat work by Suburban Pest Control. It is equipped with a p that delivers high gallonage at low pressure, and a 200' mounted on an electric reel.

Serviceman Norman E. applies 1% Chlordane solution to exterior of housing unit in the Capehart Project, Ft. Belvoir, Va. Use of injection rod shown h permitted deeper penetration of the soi without trenching, an speeded application.

TREATS 618 HOUSING UNITS 1% CHLORDANE!



Capehart housing units at Ft. Belvoir were erected on a wooded site, perfect for the development of termite colonies. Chlordane pre-treatment by Suburban Pest Control Co. has given the units lasting protection against termite damage.

SUBURBAN PEST CONTROL'S "ONE MAN METHOD"

OF PRE-TREATMENT AT FT. BELVOIR, VA.—According to the partners who operate Suburban Pest Control, the formula for success at Ft. Belvoir was the right equipment and the right chemical, plus excellent planning and personnel. They converted a 1250 gallon oil truck for termite work by equipping it with a pump that would give them high gallonage at low pressure. An electric reel was installed, with 200′ of hose.

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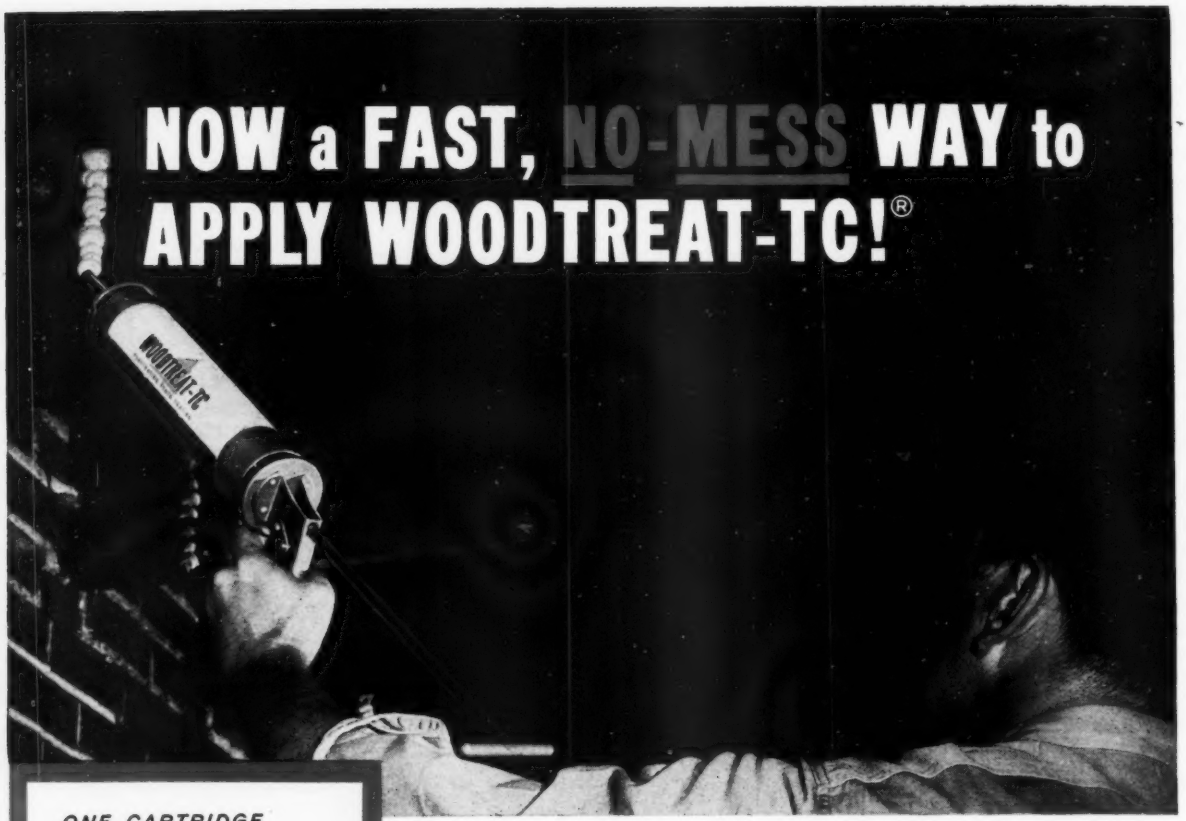

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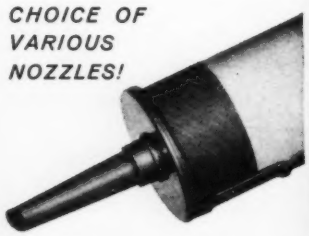

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PEST CONTROL

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Discrimination by FHA

The five-year guarantee required by the Federal Housing Administration for soil treatments and not for the other four alternative approved methods of termite protection is a kind of discrimination difficult to find elsewhere in the new Minimum Property Standards. Builders don't like this "unique" requirement which makes them responsible for work contracted to reliable pest control firms.

FHA employed the Building Research Advisory Board to investigate every phase of the method. BRAB found soil treating to be a reliable means of termite prevention and recommended its inclusion. FHA has accepted other BRAB recommendations without any limitations. Why then, in view of the endorsement by this group of experts, are soil treats singled out for a special warranty requirement? Builders fear this trend may extend to other aspects of their work.

A realistic appraisal of the FHA's stand on soil treats raises some questions about other approved termite preventive methods. Can FHA revise its inspection techniques to insure proper installation of any method used? How much protection can FHA get if it depends upon homeowners to detect infestations? Is it sure the cement mixture is correct, that there are no hidden fissures in the concrete? etc., etc.

The effectiveness of soil treating has over ten years' experience. It is not a new, unproved control method. It has much more in-the-field proof of performance than many of the just-invented gimmicks that go into new homes today. More FHA-financed homes can have economical soil-treat termite protection if the agency's present discrimination against this method is eliminated and the responsibility put where it belongs, with insured pest control firms.

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Letters

Is Phosphorus a "Metal"?

In your November issue (pg. 44), under the heading "Primer: Prep Questions for Licensing Tests, One," the reader is asked to match certain pesticides with definitions.

Under "Pesticides, No. 6, Phosphorus," the definition is given under (c) as "A metallic poison used for control of rats and roaches."

In my day of studying chemistry, phosphorus was given as a metalloid, and not as a metal.

Metalloid may be defined, among several definitions, as: "Any nonmetal," when used as a noun. As an adjective, it may be defined as "Nonmetallic; like a metal."

There is a difference of opinion among authors, who classify several of the metalloids as metals, because of certain characteristics which make them very similar to metals. However, I have never heard of phosphorus being included in the group of metals.

You may wish to call the attention of the Ohio Pest Control Association (from which the questions and answers were received) to this apparent error.

E. L. Moore

E. L. Moore Oficina Technica C. A.
Caracas, Venezuela

The error is an easy one to make, for with the increase in atomic weights of the five elements in The Phosphorus Group (Nitrogen, Phosphorus, Arsenic, Antimony, and Bismuth) in the Periodic Table each becomes more metallic. But reader Moore is correct, Phosphorus is not a "metal." The dictionary defines "metallic" *however as "Of, or pertaining to, or made of, a metal; of the nature of metal; being, or characteristic of, metal in the free state, resembling metal . . . " Maybe the examiners in Ohio are not as educated in chemistry as is Mr. Moore, and would accept the definition of phosphorus as prepared by the Ohio PCA.* Ed.

States With Legislation

I have been asked to compile a list of other states which have

pest control laws. Can you furnish me with such a list?

Harry B. Moore

Chief Inspector
North Carolina Pest Control Commission
Raleigh

As far as we know, these are the only states which now have laws regulating the activities of PCOs: Alabama, Arkansas, California, Connecticut, Florida, Georgia, Kansas, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, and Tennessee.

There are a number of cities in other states which have such laws, but we do not have a complete list of them. The District of Columbia, Cincinnati, Cleveland and Columbus, Ohio, New York City, Pasadena, Calif., San Antonio, Houston, and La Porte, Texas are nine such cities.

Readers are asked to send Pest Control *the names of other states or cities that have PCO licensing laws.* Ed.

Passing of a Pioneer

Karl Hassler built a lasting monument which will last in the minds of PCOs for years to come. A true pioneer, Karl advocated concepts which were far beyond his time. Never once did the dollar sign influence his unselfish devotion to the cause of better pest control. The great, the near great, and the neophyte turned to Karl for whatever assistance might be required. None was turned away. The world was his territory; operating tools of the trade with workers in the red hot climate of remote sections of Venezuela or the never ceasing rain of Hawaii was Karl's greatest love. For over 30 years his mind was constantly at work devising ways to do pest control work better. The basic truths and the spirit of fair play which he spent his life teaching will go on forever. We have all lost a great friend.

Ernie Forde

Honolulu, Hawaii

Pest Control welcomes expressions of opinions from its readers. Send ideas and comments as briefly as possible to James A. Nelson, Editor, Pest Control, 1900 Euclid Avenue, Cleveland 15, Ohio.

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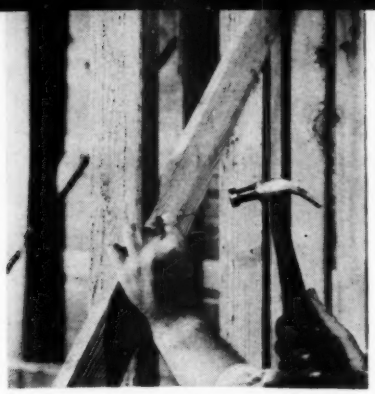

Photo courtesy West Coast Lumbermen's Association.

Figure 1. White speck or white pocket in Douglas fir studs.

When PCOs Should Use FUNGICIDES to Treat Buildings

By **ELDON H. BEHR,** Department of Forest Products, Michigan State University, East Lansing

ALTHOUGH DECAY is no doubt present in the wood of many houses and other structures in our country, it is unusual for a termite control firm to be summoned to rectify this condition. What most building owners are not aware of is that decay fungi are more subtle in their habits and method of attack than termites. There is no sudden announcement of their presence comparable to the swarming of subterranean termites. Usually the PCO encounters decay or mold after he is called on to inspect a building for termite damage. The owner then has double trouble.

How does one recognize decay and what causes it? As might be expected, there are many kinds of decay that are recognized by plant pathologists, as well as different degrees of decay. One does not have to be well versed in the subject to recognize certain important differences. As far as the PCO is concerned, it is enough to be able to distinguish between potentially harmful types and the less harmful. It is not usually necessary to identify the fungus as to genus and species. This requires much specialized knowledge as well as extensive laboratory equipment. For example, it took many years to identify a wood rotting fungus that had been used as a test organism in laboratory evaluation of wood preservatives. It proved to be *Polyporus tulipiferus* and not *Fomes annosus* as had been thought.

The potentially harmful sorts of decay are those that have entered the timber after it was cut from the tree. In the majority of instances, the rots that were present in the living tree do not continue their destructive work after it is cut into lumber and seasoned. These rots are usually found in heartwood portions of boards, dimension, and timbers. Therefore, if abnormal looking heartwood is found, especially in the protected, dry areas of buildings, ignore it. An example of wood containing white speck or rot caused by *Fomes pini* is shown in Figure 1. Douglas fir joists and other structural members containing this heart rot are used quite commonly in house construction.

There was some question as to the susceptibility of white-speck Douglas fir to decay. Does this wood rot more readily than sound heartwood? If so, can it be protected with water repellent wood preservatives of pentachlorophenol. Results are in Table 1.

It can be seen that the wood containing white speck decays more readily than the originally sound wood. This is seen in weight-loss figures and in visual appearance. The difference is most pronounced in comparing the sound with the No. 3 white speck. The pentachlorophenol treatment prevented the decay. In terms of commercial practice these results mean that the white speck wood does decay a little faster than sound Douglas fir heartwood. However, it can be readily protected. Further, in a laboratory test of this sort, a sapwood of pine or fir would probably show about 24 to 50% weight loss. Since sapwood is safe to use in proper construction, one does not need to be concerned if he encounters white speck in the wood of buildings.

Other forms of fungus which show themselves in wood are blue stain and molds. These cannot be considered as injurious to the strength of wood as it is used in most buildings, but are indicators of undesirable conditions sometime during the life of the wood. The majority of this stain enters wood during the air seasoning period. The stained wood absorbs water more readily than

Table 1. Decay of Douglas fir plywood in soil block test.

Plywood Description	Pentachlorophenol, lb./cu. ft.	Test Fungus	Weight loss, %	Visual Appearance
No. 2 White Speck	0	Poria monticola	1.6	Slight decay overall
No. 2 White Speck	0	Lenzites trabea	1.7	Slight decay overall
No. 2 White Speck	0.28	Poria monticola	0.0	Sound
No. 2 White Speck	0.28	Lenzites trabea	0.0	Sound
No. 3 White Speck	0	Poria monticola	8.7	Medium decay
No. 3 White Speck	0	Lenzites trabea	2.2	Light to Med. decay
No. 3 White Speck	0.28	Poria monticola	0.0	Sound
No. 3 White Speck	0.28	Lenzites trabea	0.0	Sound
Sound	0	Poria monticola	1.4	Slight decay
Sound	0	Lenzites trabea	0.9	Slight decay

These were laboratory soil-block decay tests conducted at Chapman Chemical Co., Memphis, Tennessee.

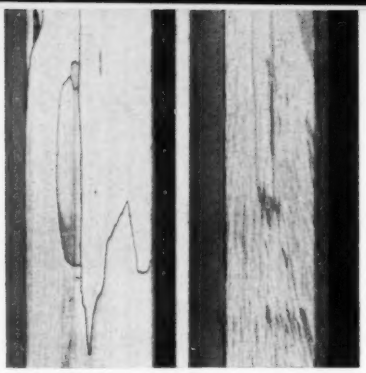

Figure 2 **Figure 3**

(**Left**) Zone lines on piece of elm. These are an indication of incipient decay. In this case, decay probably began in the tree. No treatment would be necessary if found in a dry, protected area of a building.

(**Right**) Incipient decay. Note splotchy areas. This may have started in the wood after it was put in use. If found in moist area the wood should be treated with a fungicide.

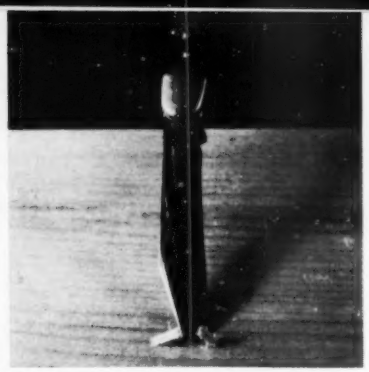

Figure 4. Knife pry test on ponderosa pine with incipient decay showing brash fracture. Not all brash fractures, though, indicate incipient decay. However, discoloration coupled with brash fracture usually indicates need for application of fungicide..

Figure 5. Normal fracture on sound portion of the same board as shown in Figure 3.

does bright wood; consequently, if found in a structure where moisture is likely to condense, it should be treated by the PCO. In places such as attics it can be ignored, as it probably entered the board before the building was constructed.

Molds usually take the form of yellow, orange, green, gray, or black fuzzy discoloration on the surface of materials. Most of them thrive in locations of extremely high humidity and appropriate temperatures. Seventy percent relative humidity is about the minimum limit for growth. These are also the conditions relished by wood rotting fungi so the presence of surface molds may be an indication that decay is present. However, these molds have been found in attics where little or no ventilation existed.

In one large, new, expensive house, the builder had failed to provide enough openings in the eaves for attic ventilation. As a result, moisture from such areas as the kitchen and bathrooms passed into the attic and was trapped. It condensed on the roof sheathing, which was made of sap ponderosa pine, to such an extent that a green mold was flourishing. In such a situation no fungicides are needed — only improvement in the ventilation. The spores could be destroyed by swabbing with 70% denatured alcohol or a dilute solution of sodium hypochlorite. This would lessen the number of spores that could get into the air in the house or into wall voids where they might prove annoying to some people. The mold is not, however, harmful to the strength of the wood. Molds have been found that increase the water absorption of wood. If such a mold grew on the wood during the seasoning period, it could pick up water more readily in a building if used in a location subject to leakage or condensation.

Decay That Starts After Timber Is Cut Into Lumber

So much for the sorts of fungus growth that are not greatly injurious to the strength of wood. Let us turn our attention, then, to decay that enters wood after the tree is cut into lumber or put into use. The various kinds of decay are classed by plant pathologists largely on the basis of surface appearance. For example, one of the most common kinds of rot found in the wood of houses, garages, and the like is brown rot or "shrink" rot. The fungi which commonly cause such rots are:

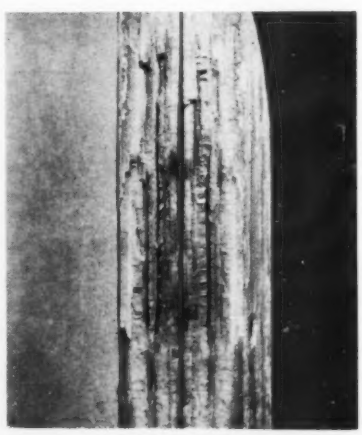

Figure 6. Brown rot in southern yellow pine. Note cross breaks in the wood. Wood this badly rotted in a strength member or in finish should be replaced. If not possible to do, a thickened preservative should be applied liberally and extensively.

Lenzites trabea, *Lenzites saepiaria*, *Poria xantha*, *Trametes serialis*, and *Fomes roseus*. The brown rots attack chiefly the cellulose of the wood, rapidly reducing its strength. White rots constitute the other group. These attack both cellulose and lignin. They are not nearly so common in buildings. A special sort of a brown rot is the so called "dry rot" caused by *Poria incrassata*. It is insidious in its method of attack. By specialized anatomy it is able to rot comparatively dry wood by conducting its own water from a distant source. The term *dry-rot* is used rather loosely by most people in referring to decayed wood that has reached an advanced stage and is beginning to crumble. This is an incorrect usage.

Although decay is easily recognized in wood when it reaches the state that allows one to distinguish between white rots, brown rots, pocket rots, etc., the timber is then so near destruction that the only recourse is to replace it. The incipient stage of decay is really of greater importance to the termite control man. After a decay fungus begins growth on timber a stage is reached where there may be some outward signs of deterioration, but almost always a decrease in certain strength values of the wood. This is the *incipient* stage. Assume decay has progressed to the point that cross cracks and shrinkage are occurring in a certain place on a timber. At a distance away from this place will probably be seen wood which appears sound but has subtle discolorations. This is incipient decay. It is found as much as two feet away from the obvious rot in a direction along the grain if the wood is moist.

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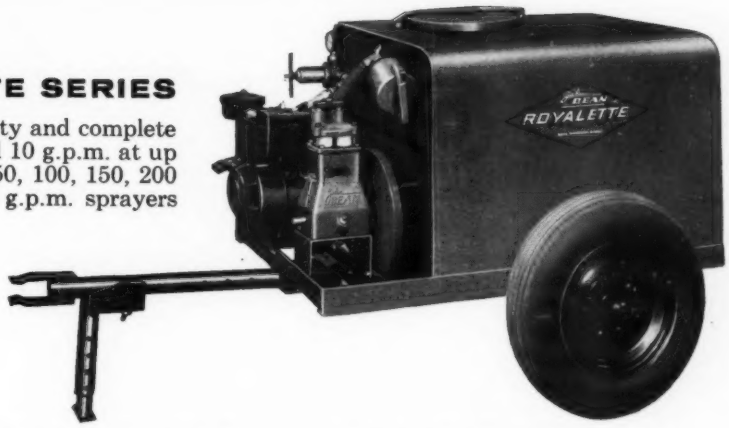

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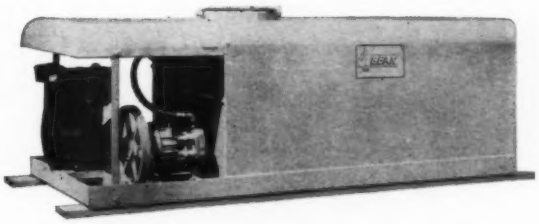

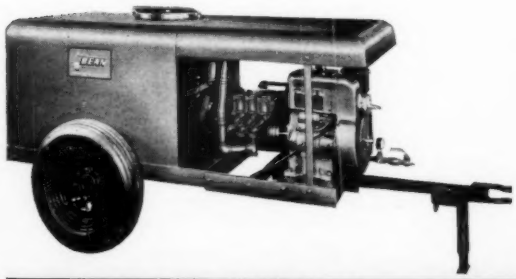

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incipient decay may help in its identification. On softwood, (coniferous timber) there is reddish discoloration frequently with bleached out areas. In hardwood the discoloration is whitish to dark brown. Bleached out areas are to be regarded with suspicion as they usually indicate presence of a fungus. One should also look for wood where the white lace or fan-like growth of a fungus is present. In locations of high humidity this mycelium can grow over sound wood from a focus of infection in decayed wood, resulting in spread of rot to sound wood. The fibers are weak; they break off short without stringiness which is typical of sound wood, when a knife point is inserted in the wood and pried upward.

Where to Find Rot

As far as the locations in buildings where one is likely to find rot, the PCO will probably encounter most of these in his inspection for termites. Since decay fungi like warm, moist places this is the most likely area for their damage.

If a house was built using green lumber, as so many were during and after World War II, decay could be found most anywhere. Outward indications could be paint that refuses to remain intact, sunken areas in floors, walls, moist areas, and fruiting bodies such as toadstools or conks. The chances are pretty good, though, that in the 10 or more years intervening, that most of this has been corrected or else the building is beyond hope by now.

If wood is in contact with soil in any part of a building, look out for trouble from both decay and termites. Condensation can be a source of moisture that could bring on decay. Places to look for this are where cold water pipes touch wood in areas of high humidity, cold areas of basementless houses on moist sites, places where condensation from cold surfaces can drop on wood like under flush boxes, inside walls of houses where vapor barrier paper has been used without proper insulation on a cold wall, and window sashes or frames on the north side of buildings.

Then there are places where water leakage from plumbing fixtures, pipes, or from rain leakage can induce decay. Some of the latter would be found in exterior locations. There are also some locations of extreme severity for use of untreated wood such as the roof decking in paper mills, textile factories and the like.

Decay is also likely to be found in the wood screeds, mud sill, and flooring in houses built on a concrete slab that is improperly waterproofed or insulated. Unfortunately, decay in these members is largely hidden from view until it has progressed to serious proportions.

Check also all wood in contact with masonry, especially floor joists embedded in basement walls and paneling in basements.

A simple but effective test for decay in addition to the prying of fibers is to probe the wood with a knife or ice pick. If the knife can be inserted easily per-

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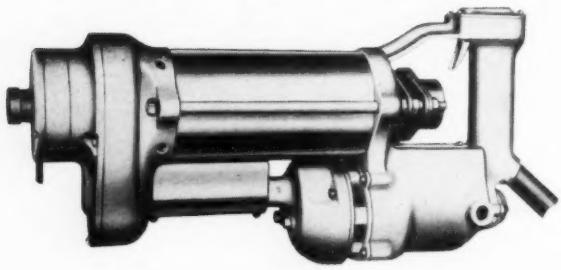

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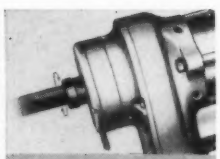

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Figure 7. Decay in a door casing in contact with moist masonry. Fungicide should be applied to arrest decay if it has not progressed very far.

pendicular to the wood surface, decay is well advanced. By probing the wood at varying distances from the softest places some idea of the extent of damage can be had.

Look for most trouble in buildings framed with southern yellow pine since it contains a much greater proportion of sapwood than does Douglas fir. Old stumps left under basementless houses have been known to lead to severe decay in the structure of a house by spread of rot to sound timbers. These should be removed and wood formerly near them examined for decay.

What to Do About Decay

Now that we have discussed the appearance and location of decay, the question is: what should be done about it? It should be fairly obvious that the first thing to do is remove the source of trouble if at all possible.

From what has been said so far, it can be assumed that moisture in wood is a necessity for decay. This assumption is correct. In addition to moisture, usually above 25%, oxygen, and correct temperature range are also critical to fungus growth. Since the oxygen supply is almost always adequate in wood used in building construction and decay fungi can rot wood if the temperature is in the range of 40°F to 110°F, the best way to keep wood from decaying is to keep it dry. Sources of moisture leakage should be stopped and condensation reduced.

Where decay has progressed to one of the advanced stages the whole timber should be removed, if at all possible, and replaced with preserved wood. This is especially recommended where the piece of wood in question is an important strength member. One is only prolonging the trouble if untreated wood is nailed to partially decayed wood in a repair job.

We are then left with the conditions where fungicide application is recommended. These are found in Table 2 together with recommended action. Incipient decay is hard to identify in some cases, but can usually be suspected as much as a foot or two away from a point of active decay in the grain direction.

If removal of the infected wood is too costly, a one-quarter inch layer of a grease or emulsion type wood preservative should be applied to the entire surface of the decayed member. In fact, the penetration and retention of these is so much better than that obtained by brushing more conventional types that they should always be used when

Table 2. Procedure for dealing with fungus growth in buildings

Appearance of Wood	Probable Cause	Action to be taken
Covered with powdery or fuzzy layer of colored growth.	molds	1. Brush off mold. Apply 70% alcohol or sodium hypochlorite. 2. Correct ventilation and eliminate source of moisture. 3. Apply brush coat of water repellent wood preservative.
Bleached areas or discolorations at some distance from decay or in a location conducive to rot, on sapwood. Wood usually moist.	incipient decay	1. Replace with preserved wood. 2. If replacement not possible, apply grease or thick emulsion type preservative to entire board or timber. 3. Treat surrounding masonry and apparently sound wood with wood preservative.
White or cream colored lacy surface growth or sapwood but wood not soft.	mold, minor sapwood rotter or decay beginning	1. Remove surface growth. 2. Apply wood preservative by brush or better, grease or emulsion type. 3. Eliminate source of moisture.
White specks on various coniferous wood but especially Douglas fir heartwood.	Wood infected in living tree	1. None
Wood crumbly brown	decay fungus, brown rot	1. Remove wood. 2. Replace with preserved wood. 3. Apply wood preservative solution to any sound wood in vicinity of rotted wood.
Sound but in contact with basement floor, earth or concrete wall.		1. Remove soil. Treat with grease or emulsion type preservative if pine. 2. If Douglas fir and soil removal not possible, drill holes near critical area so as not to weaken wood and fill with thick or grease type preservative.
Blue to black streaks in softwood sapwood in an area of high moisture.	sap stain	1. Brush or spray wood preservative. 2. If on window parts or other trim, use paintable water repellent wood preservative, but first, remove finish from wood.

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Table 3. Retention of preservatives from brush and dip treatment of 5% pentachlorophenol in range oil compared to thickened emulsion of pentachlorophenol.*

Type of treatment	Depth analyzed, in.	Pentachlorophenol Retention, lb./cu. ft. Southern Yellow Pine	Douglas fir
I. Application to End Grain			
3 minute dip	6"	0	0
10 brush coats	4"	.07	0
¼ in. thick emulsion	4"	.152	.009
½ in. thick emulsion	4"	.340	.012
II. Application to Flat Grain			
3 minute dip	2nd ⅛ in. from surface	.024	.006
10 brush coats	"	.060	.078
⅛ in. thick emulsion	"	.460	.111
¼ in. thick emulsion	"	.860	.117
¼ in. thick emulsion	3rd ⅛ in. from surface	.600	.102

* From paper by Ralph G. Van Allen, Forest Products Journal, 6, 374-381 (1956) A new method of applying pentachlorophenol to wood in place.

possible in cases of this kind. When using these preservatives, adequate time should be allowed for penetration before the preservative is scraped off.

Where only surface protection is needed, a brush coat of wood preservative or water repellent-wood preservative is adequate. When decay is found in wood, the areas of wood and masonry some distance away should be given a brush coat of fungicide as a precautionary measure. Even where wood is found to be sound but in contact with concrete or soil, a liberal application of the grease or emulsion type should be applied near the point of contact. As can be seen from Table 3 and Figures 8 and 9, enough penetration and retention result from this application to give good protection. As can also be seen from Table 3, a brushing preservative is not nearly as effective from a retention standpoint as the use of an emulsion type preservative. The brush application did not leave enough preservative in the wood below one-eighth inch in any case. With pentachlorophenol, it is necessary to have about 0.125 lb. per cubic foot present to arrest one of the most common rot organisms, judging from laboratory tests. Douglas fir does not absorb this quantity below ⅛ inch even with the emulsion type, but this is not much of a stumbling block because this is Douglas fir heartwood that is already somewhat resistant to decay. Table 3 shows some of the values just discussed for retention and penetration of pentachlorophenol from brush and emulsion type treatments adapted from work done at Wood Treating Chemicals Company.

Grease-type Preservatives

To show the possibilities of penetration by a grease type preservative in the treatment of house structures, figures 8 & 9 should be inspected. These tests, run at Chapman Chemical Company, show the results of treatment of some simulated stud-on-plate assemblies. As far as extension to house structures that the PCO would treat are concerned, they serve to illustrate several sorts of units he may encounter. As can be seen from the pictures, short pieces were nailed to horizontal pieces that represent studs. A bead of wood preservative grease was applied on each side of the junction of the vertical piece with the horizontal. Either 0.04 or 0.08 pounds was applied as shown. After allowing ample time for penetration to reach a maximum, the pieces were split, measured, and photographed. Table 4 shows the results.

These results indicate that, in many cases, almost complete penetration of the wood could be obtained where it was required to treat framing members of a structure. Notice in the pictures, though, the variability in depth of penetration from piece to piece. The important point is that penetration is far superior to that which could be obtained

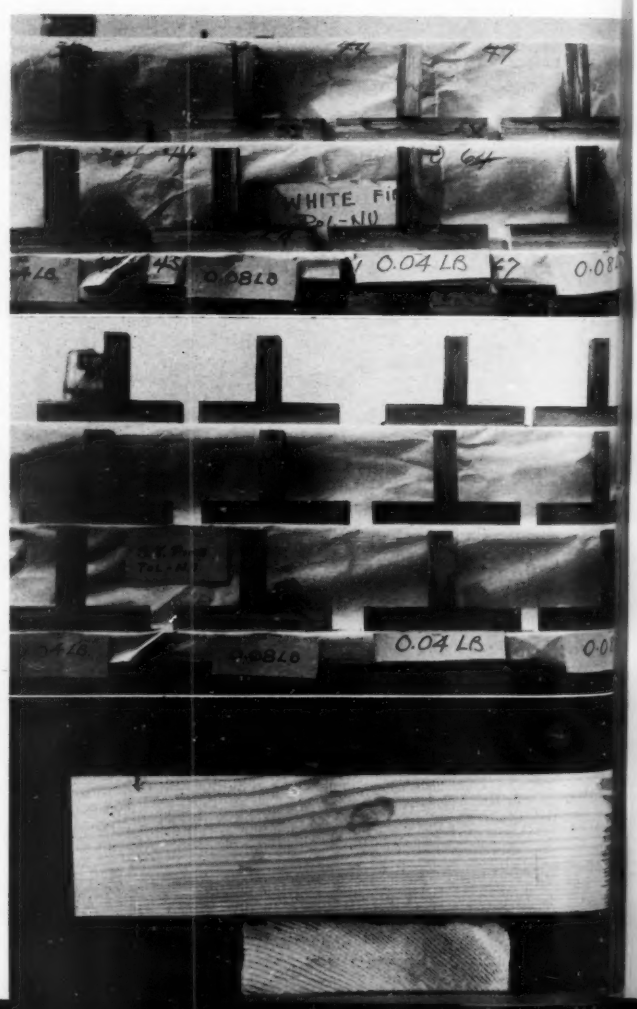
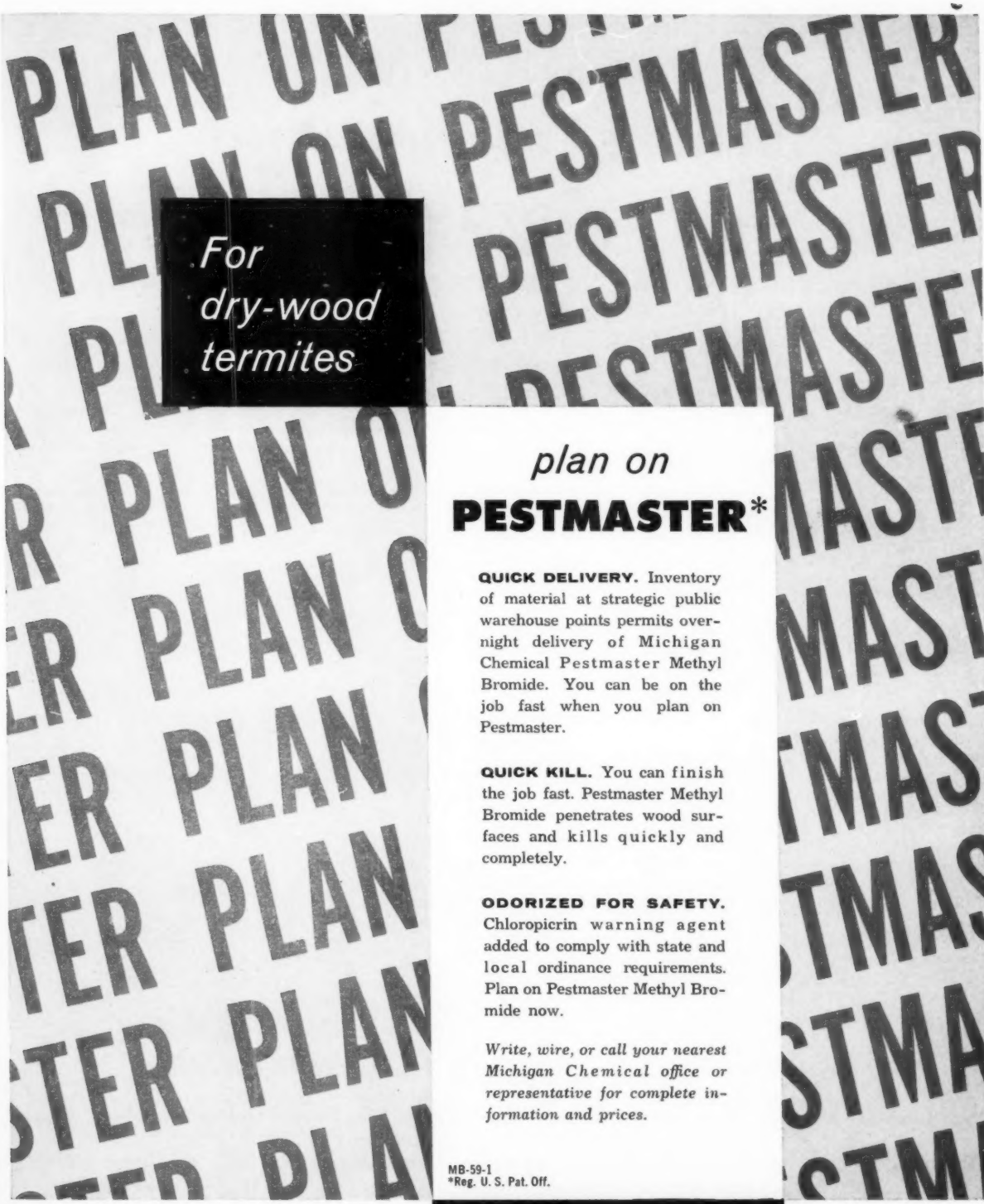


Figure 8. Penetration of pentachlorophenol solution into western fir from an application of a bead of grease-type at the joint. Those upright specimens that do not show line of penetration were completely penetrated.

Figure 9. Penetration of same preservative used for Figure 8 into southern yellow pine.

Figure 10. Penetration of emulsion type preservative into Douglas fir heartwood.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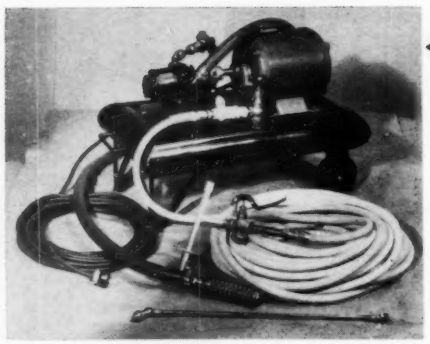

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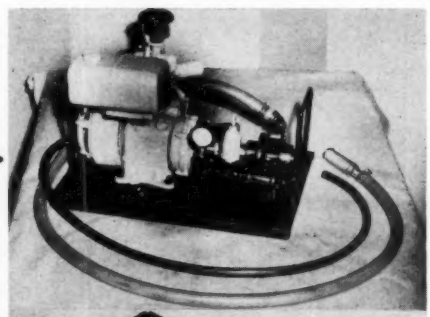

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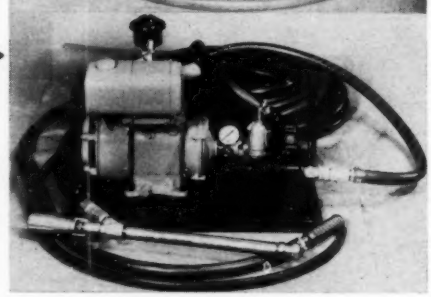

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The house is treated for termites and during this work, an area is found where water from a defective downspout has kept the soil very wet. This has resulted in much condensation on the sills and joist ends. In addition, a fault in the construction has caused condensation to run against some joists. Some beginning decay is found on the sill, but the knife-test indicates it has progressed only into the surface. Surface mold is growing on several structural members. The wood is all southern yellow pine.

Since no strength member is yet in a badly rotted state, a one quarter inch application of a grease or thickened emulsion type of preservative is applied to those members with decay and to those abutting on them. On the subflooring a brush coat of wood preservative is applied unless it, too, is showing much decay. It may be risky to apply the grease or thickened types because of possible bleed through joints into a finished floor. The mold is removed with a sponge moistened with denatured alcohol and a brush coat of water repellent preservative applied.

Finally, roll roofing or other vapor barrier sheeting is placed on the soil where it appears moist. The down spout is repaired, but occasional drip from condensation can't be helped. Still, the preserved wood should now be safe from decay that might be induced by the drip.

It might be pointed out here that use of preserved wood in the framework of the house when it was built would have stopped all but some of the termite trouble in the flooring.

Obviously, each case encoun-

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Figure 11. Application of thickened preservative to floor joists with a caulking gun. A ridge of preservative should also be applied on each side of the joist at the point where the wood is embedded in the bricks.

tered will be different. The essential thing to remember is to use enough of a preservative that will penetrate the wood as shown by the evidence presented here. One should also treat wood that could be infected by spread and contact.

Figure 11 shows application of the thickened emulsion type and Figures 8 & 9 show the depth of penetration of a grease type into simulated stud-plate or sill-header pieces of various framing species.

Common Preservatives

A complete list of all the brand names of available wood preservatives cannot be given but a listing of the more common types can. There is a fairly complete listing starting on page 55A of *Industrial and Engineering Chemistry* for April 1959. Many college libraries subscribe to this journal in case one wishes to consult a copy.

The listing here shows the active ingredients of the most commonly used preservatives for wood for uses described in this article. These are not, of course, used in the form of the compound shown but are formulated in petroleum solvents. Water solutions are not normally used in the locations described due to inadequate penetration in dry wood from a brush application or paste type. If you plan to apply the preservative to such items as window frames requiring paint, be sure to get a paintable type. Many are available as concentrates which are diluted with a petroleum solvent before using.

As with many other subjects, it is difficult to describe all the different sorts of fungus growth that the PCO is likely to encounter. There is really no substitute for first hand examination. We hope, though, this description has been extensive enough to give the operator some confidence in knowing how to handle decay when he sees it.

Table 4. Penetration of grease-type preservative of pentachlorophenol into end and side grain of simulated stud-on-plate units.

Species	Amount Preservative per unit, lb.	Approx. Penetration, inches. End Grain Ave.	End Grain Min.	(directly under vertical piece) Side Grain
Southern yellow pine sapwood	.04	2.07	.87	.63
Southern yellow pine sapwood	.08	3.08	2.07	.78
Western fir	.04	2.83	1.80	.88
Western fir	.08	4.13	3.25	.67

Table 5. Commonly used fungicides for wood preservation.

Active Ingredient	Usual Concentration*	Remarks
Copper naphthenate	1-2% as copper metal	Has distinctive odor. Also in water repellent form.
Copper-8 quinolinolate	.25%	Used primarily where food might touch treated wood.
Zinc naphthenate	2% as zinc metal	Has distinctive odor, is usually in nearly colorless solution.
Pentachlorophenol	5-10	Available in water repellent form, grease, and thickened emulsion.
Chlorinated phenol mixture	5% total	Available as water repellent formulae.
Anthracene oils	100%	Has strong odor that may be objecticnable.

* This is for surface application or application in place. For pressure or thermal treatment a different concentration might be used.

How Are Your Employee Benefits?

Employment agreements with servicemen usually stipulate limitations upon them if they leave. There is a difference of opinion on the legality of restrictive contracts depending upon the precedent established in each particular state.

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Vacations with pay will be granted as follows:

Continuous service as of May 1	Vacation pay for:
6 mos., but less than 1 yr.	3 days
1 yr., but less than 2 yrs.	1 week
2 yrs., but less than 10 yrs.	2 weeks
10 yrs. or more	3 weeks

with the third week to be taken so as not to interfere with summer productivity.

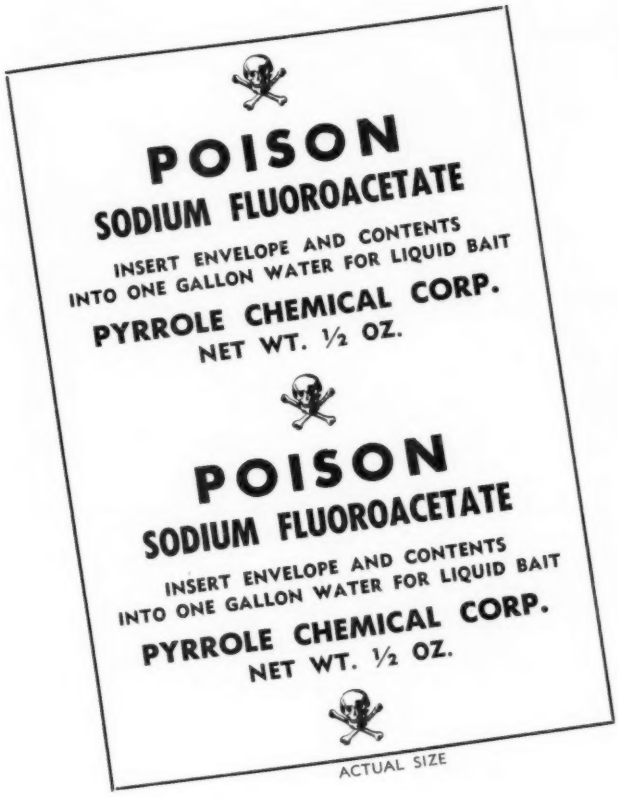
Miscellaneous Benefits

"1. The Company agrees to grant three days off without loss of pay in the event of death of an employee's mother, father, sister, brother, spouse, child, mother-in-law, and father-in-law.

(Continued on page 52)

PYRROLE CHEMICAL CORP.

It's In The Bag!



ACTUAL SIZE

The New
Water - Soluble
½ ounce Bags of

SODIUM FLUOROACETATE

The Most
Positive Method of
Rodent Control

1. **Eliminates Measuring**
2. **No Contamination of Utensils**
3. **Safer to Handle**
4. **Exact Weight - No Over-dosage**

•NO INCREASE IN PRICE

It's in the bag!—
IN STOCK—
For immediate delivery

Each lot assayed for Purity and Guaranteed.

Only Govt.-approved black dye used for identification.

by

Pyrrole Chemical Corp.

817 SPRING LANE **Telephone ELmwood 3-3960 or 3-3966** **PORTSMOUTH, OHIO**

Use **MGK's** *Tested*

WATER SOLUBLE

Dipterex Powder*

To Positively Control Resistant German Roaches

NO OBJECTIONABLE ODORS

MGK DIPTEREX is the complete answer for the control of resistant and non-resistant German roaches in restaurants, bakeries, food shops and the many other places where unusual odors could cause a loss of business volume. DIPTEREX is both efficient and effective and creates no objectionable odors.

EXCELLENT RESIDUAL CONTROL

In addition to its positive effectiveness, DIPTEREX provides excellent residual control. Professional pest control users report up to twenty-one days control with from 90 to 95% improvement at the end of that period.

COMPLETELY WATER SOLUBLE

Being completely water soluble, DIPTEREX is not only economical, but eliminates the element of residual stains. If you are not using DIPTEREX, or do not have full information on its special properties, please send the coupon.

*Trademark of Farbenfabriken Bayer A. G. inventor and licensor to Chemagro Corporation.

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G **ORMLEY**
K **ING** *Company*

1715 S.E. Fifth Street / Minneapolis, Minnesota

McLAUGHLIN GORMLEY KING COMPANY
1715 S.E. Fifth Street
Minneapolis, Minnesota

● Please send me a free sample of DIPTEREX, price and data sheet.

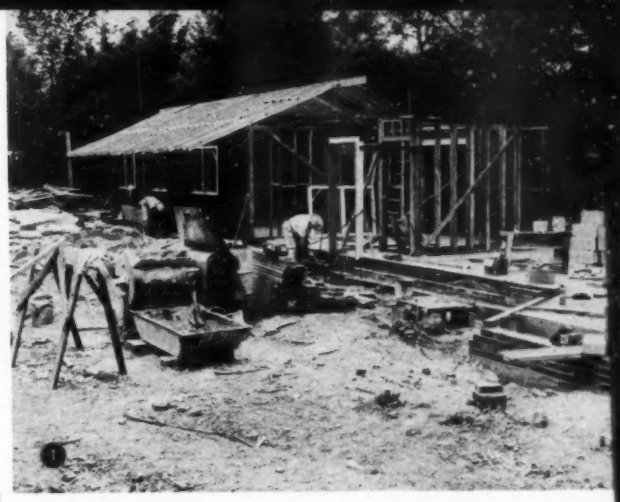
NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

On the spot picture story shows how

Getz Pretreats Basement Type House During Construction



Most publicity is currently focused on the soil pretreatment practices used to prevent termite entry in slab-type houses. Yet thousands of new, and often more expensive homes are being built with a conventional excavated and finished cellar. Here is a comprehensive photo record of how Getz Exterminators, Inc., of St. Louis, Mo., chemically treated the soil of a house with 80% full basement and 20% crawl space. It was well under construction when Getz received a hurry-up call to begin work. These excellent pictures were taken last summer by representatives of Shell Chemical Corp. to show the major steps required for treating this type of construction. Soil poison used was .3% dieldrin. With each of the 14 illustrations furnished by Shell, is an explanation of how the work was performed by Getzmen.

1. View of home in various stages of construction showing sections of brick veneer wall, sub-flooring, and insulation board.

2. Close-up of soil treating equipment. A .3% dieldrin solution was mixed in a 55-gal. drum and dispensed through a Hypro pressure pump powered by a 4 h.p. Larson gasoline engine. On tailgate of panel truck is probe rod used for rodding outside of foundations to get penetration of solution to the footings.

3. Typical trenching operation around perimeter of the foundation. In this particular job, it was necessary to trench because the loose backfill had already been replaced by the contractor. The outside perimeter of the foundation wall is treated prior to backfilling.

4. This stage of treatment shows the chemical being drenched into the open trench. Solution must penetrate all of the way down to the footings. Application was made using the chemical at the rate of 2½ gals. per 5 linear feet.

5. Probe and pressure valve, developed by Getz Exterminators, is used in compacted soils where solution does not reach the footings in flooding or drenching applications. Rod insures adequate chemical distribution at the footing. Rod is 36" long and is operated under pressure of 60 to 100 psi.

6. Close-up showing probing to the footings and the white emulsion bubbling up to the surface.

7. Rake is used to backfill after trenches are flooded and footings treated.

8. Next, backfill is treated after the soil is in place against foundation. Chemically-resistant hose is always used as are quick coupling connections.

9. Application of insecticide to the surface of the soil in crawl space area is made at the rate of 1 gal. per 10 sq. ft.

10. Close-up of treatment of perimeter of foundation wall in crawl space. Notice how ground is soaked.

11. Treatment of area inside perimeter of foundation prior to pouring of basement floor.

12. Where basement section meets crawl space area, Getz lays a heavy chemical barrier down along inside of adjoining wall. All debris is raked up and eliminated before floor is poured to assure long protection against termites.

13. Getz also treats sill plates and joists, thoroughly drenching them with insecticide. This protects not only the wood from termite attack, but also controls many crawling insects which may attempt to enter the basement area and then up into the house via floor cracks and wall voids.

14. In overall treatment of basement floor area 1 gal. of chemical per 10 sq. ft. is used. A total of 300 gals. of .3% dieldrin (5 gals. 1½ lb. emulsifiable concentrate) were required to treat the entire area of this particular structure. Since house was well along in construction, it took two men three hours each to complete the job. Where treatment is done all during construction, more time is required.

Sales Ammunition for Pretreaters . . .

Looking for facts to present homeowners, contractors, builders, and lending agencies to help you sell pretreating to prevent termite invasions? In January (page 38) Pest Control reported to you that in California from 25 to 60% of the slab homes already were infested in one segment of the state where they were one or two years old. Here are figures on termite trouble in the Southeast.

In the Alexandria and Lake Charles areas of Louisiana, from 25 to 30% of the "slabs" show infestation in five years. In Jackson, Miss., 50 to 60% of the under five-year olds have the wood-eaters at work.

For Texas, some areas have less than 10% infested, but in others, over 50% of the houses are infested. At Texarkana, in an old forested area, 90% of the slab dwellings had subterranean infestations in the first year.

Use these statistics to show the public that concrete slab construction is not the protection against termite attack they think it is.

A group of termite control operators, meeting in the South last fall under sponsorship of the National Pest Control Association, decided the most convincing appeals for pretreating to the general householder are (1) based on the protection it affords a major investment, (2) the slow, but insidious and costly damage termites cause, and (3) the actual economy of pretreating over having more expensive corrective treatments made later.

For example, in the Memphis area, TOs said pretreatment costs only 40% of what it would to correct an infestation in slab homes. For houses with crawl spaces, soil poisoning is 50% cheaper than corrective measures. In Oklahoma City, pretreats can be made for 25% of the usual corrective treatment. In all cases, there is the likelihood additional expense will be required to make repairs once a house is infested with subs.

After the Job is Sold

Keep on selling, even after you have the signed contract in your pocket. Make the most of your application procedures.

Where possible, post signs in front of the house, or development, to let prospective homeowners and passers-by know the property is being protected against termites by your company. Give builders brochures or other sales material they can use to sell their customers on the extra protection being built into their homes.

Paragraph 815-2.3 of the Federal Housing Administration's 1959 Minimum Property Standards says builders must post a notice in the dwelling that termite protection has been provided. Take advantage of this stipulation by offering contractors such forms free of charge. Of course your company name and address should be plainly printed at the bottom. These notices are placed on storeroom doors, inside medicine cabinets, etc. Some TOs designate the presence of termite protection with an addressograph-like metal tag which can be wired to plumbing in the basement.

Builders welcome any promotional material soil-treaters can furnish them. Such advertising has a double-barreled benefit that continues to sell long after the pretreat has been completed.

TERMITES and Wood Destroying FUNGI

By
ALFRED E. LUND
Koppers Company, Inc.
Verona Research Center
Verona, Pennsylvania

BECAUSE of the recent renewed interest in the relationship between subterranean termites[1] and fungi, it seems appropriate to detail some of the current ideas and studies concerning this relationship. These ideas generally revolve around two specific questions: (1) is it a prerequisite that before termites can attack wood it must be infected and degraded by decay fungi, and (2) is the presence of a decay fungus necessary for the prolonged sustenance of the attacking termites?

Before discussing these two issues, a few background statements concerning wood attack and ingestion of wood particles should be presented. A careful observation, under low to moderate magnifications, of undecayed, moist wood being attacked by termites will make it quite clear that particles of wood are actually being removed and ingested by the insects. The removal rate by a single feeding insect will initially depend on the condition of the wood (principally hardness). When an unsoftened piece of wood is the food source, the feeding termite has been observed to manipulate its mandibles in a scraping fashion on the wood surface until it has succeeded in prying up a small portion of a wood fiber, or fibers. Grasping this between its mandibles the termite intensifies its actions until it has succeeded in tearing the splinter from the wood. It appears to be characteristic for the termite to move its head in a side-to-side manner in attempting to remove this splinter.

If the wood is impregnated with a non-toxic dye before it is made available to the termites, it becomes easy to follow the passage of the ingested wood particles. The study requires the judicious selection of termites at varying intervals with the subsequent removal and examination of their digestive systems. Under high magnifications, particles of stained wood may be observed in the various sections of the digestive system and, if desired, particle size measurements can be completed.

To return to our original discussion, the first question concerned the necessity of previous fungal infection before the initiation of termite activity. A number of studies, beginning in the early part of this century, were directed towards this relationship. A majority of these earlier investigators[2] concluded that there appeared to be a definite association between termites and fungi, however, certain workers pointed out that the relationship may have been a fortuitous environmental association and not necessarily a form of mutualism. It appears that a majority of the observations were made utilizing wood that had been exposed outdoors under normal atmospheric conditions — conditions favorable for the development of both termite **and** fungal attack.

More recently, laboratory studies[3] utilizing termites have shown these insects have attacked wood which has been referred to as sound—uninfected by fungi. A perusal of the reports indicates that, usually, the condition of the wood was determined by hardness tests (mainly, the resistance to indentation by the thumbnail), and color characteristics (wood frequently changes in color after a short period of infection by fungi)[4]. These tests, while useful for a number of decay fungi, do not declare the wood free from fungal infection, but rather, free from an advanced stage of decay. Thus, it is evident that wood when first infected is not readily detected utilizing these methods.

Conclusive Evidence

For a more critical determination of the necessity of previous infection a study was designed[5] employing more positive detection methods of early fungal infection. Small pine blocks found by examination to be free from infection were exposed to subterranean termites for varying periods—up to 20 days. After removal, each block was sterilized and thin sections (0.0008 inches

1. Hereinafter shortened to termites for brevity.

2. See, for example; Hendee, E. C. pp 105-114 in Termites and Termite Control, 1946.

3. A recent study: Pence, R. J. The prolonged maintenance of the western subterranean termite in the laboratory with moisture gradient tubes. Jour. Econ. Entomol. 50:238-1240, 1957.

4. Studies along these general lines have been carried out by a number of organizations, e.g., the Commonwealth Scientific & Industrial Research Organization, Australia, and the Forest Research Institute, Union of South Africa.

5. Originated at the School of Forestry, Duke University and completed at the Verona Research Center, Koppers Co., Inc.

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FOR SAFE, EFFECTIVE INSECT CONTROL

A PRIME PCO TOOL! A PRIME PROFIT SOURCE!

(5-LB. SIZE TREATS 1200-1500 ROOMS)

New **LOCK-OPEN FOGGING NOZZLE**
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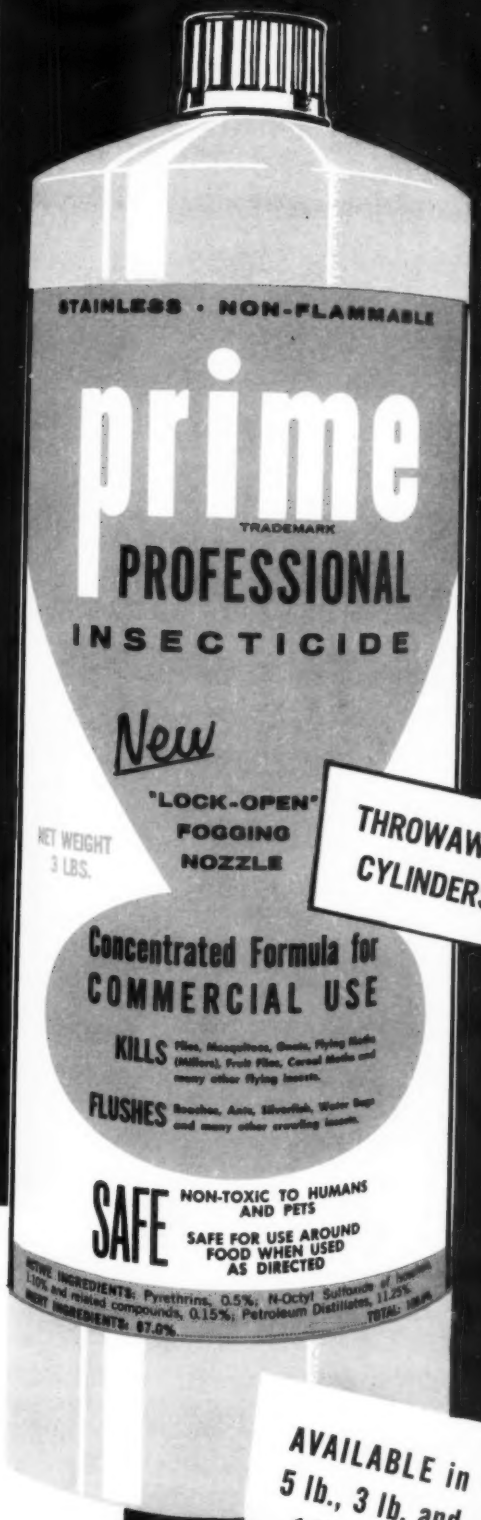
. . . easier!

Free **WALL BRACKET**
. . . for handy storage



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1. To fog space with dry mist to kill all flying insects.
2. For use where only SAFE, non-toxic insecticides must be used.
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safe! Non-toxic to humans and animals. Stainless! No lingering odor. Non-explosive! Non-flammable!

effective! Concentrated formula—contains 0.5% Pyrethrins. Any flying or crawling insect knocked down . . . dies! There are **no** recoveries! Kills even resistant insects.

convenient! New "lock open" nozzle makes fogging faster . . . easier! Just push valve to lock open. Hold cylinder aloft and walk at normal pace through building. Push valve to release.

economical! One 5 lb. aerosol treats 1200-1500 rooms for LESS THAN A PENNY PER 1,000 CUBIC FEET: equals 10 to 12 gallons of fogging spray. SAVES MANY MAN HOURS OF LABOR. Available in 5 lb., 3 lb., and 1 lb. sizes

plus. PRIME'S PROVEN SALES FORMULA FOR PCO'S!

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I'm interested in PRIME and its proven sales formula. Rush details to me.

Firm Name_____

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Address_____

City_____ State_____

My PCO Distributor is_____

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TABLE 1

The Relationship of Fungal Attack to Termite Attack After Varying Exposure Periods

Block No.	Termite Species[1].	Days of Exposure to Attack	Stained Hyphae as Evidence of Fungal Infection
1		0	Absent
2	V	4	Absent
3	F	5	Absent - trace
4	V	6	Absent - trace
5	F	7	Absent - trace
6	F	12	Light - Heavy
7	F	14	Light - Moderate
8	F	16	Light - Moderate
9	V	18	Light - Heavy
10	V	20	Moderate - Heavy

1. V = **Reticulitermes virginicus** Banks
F = **R. flavipes** Kollar.

thick) were cut from the wood. These sections were dyed with a stain which selectively colors fungal spores and hyphae. Following a microscopic examination (up to 900 diameters magnification) positive data as to the presence or absence of a fungal infection could be recorded. The results of this study are given in Table 1. All of the specimens were attacked by termites within 24 hours after exposure.

This study then has given conclusive evidence to what other experiments have indicated: it is possible for certain species of subterranean termites to initiate wood attack (at least on southern yellow pine, **Pinus** spp.) without previous infection of the wood by wood-destroying fungi.

An inspection of the data in Table 1 shows that as the exposure to termite attack continued, fungal attack was initiated and then intensified with time. This is not unexpected for the termites carry numerous hyphal fragments and spores on their bodies as well as within their digestive systems. With the passage of time the hyphal fragments will infect the new wood, as will the germinating spores. These fragments and spores are previously obtained in traversing and ingesting decaying wood (decayed untreated wood is common in a natural environment).

The second question posed at the beginning of this discussion is the more difficult of the two to answer because of the technical problems involved in designing an experiment which would exclude the presence of fungal spores and hyphal fragments from the termite (external and internal) without damaging their symbiotic protozoa. An aseptic test environment is relatively easy to obtain. Past studies[6] have not yielded sufficient data on this relationship to permit a conclusive answer. The problem remains one of nutritional requirements, for the study previously described has shown that termites are able to ingest particles of unsoftened wood and, hence, the presence of decay does not appear to be of importance from a mechanical viewpoint (reduction in hardness). Future studies should elucidate the importance of hardness in the preferential attack of certain wood species by termites.

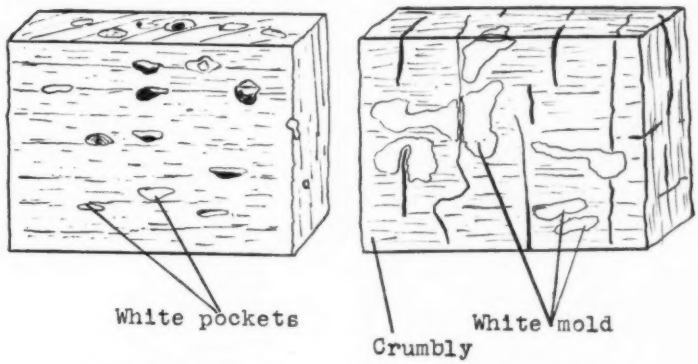
It is debatable whether termites are able to derive all the necessary nutrients for their sustenance from a given species of wood or whether they require the

6. Kofoid et al. Termites and Termite Control. 1946; and Hungate, R. E. Bot. Gaz. 102:382-392, 1940; Ann Entomol. Soc. Amer. 34: 467-489, 1941; Proc. & Trans. Tex. Acad. Sci. 27: 91-98, 1944; among others.

Common Wood Rots

By DR. W. B. BECKER
Massachusetts Agricultural Experiment Station, Amherst

Wood rots are caused by fungi, and develop only on wood which is exposed to moist situations. There are two main types of wood decay.



WHITE SPONGY and POCKET ROTS

BROWN CUBICAL or "DRY" ROTS

Look for

Wood reduced to a white spongy mass, or with few to many white pockets or cavities (sometimes fused) in the direction of the grain, separated by apparently sound wood; pockets empty and lined with white fungus threads, or reduced to a spongy fibrous mass.

Wood reduced to a light to dark brown mass which can easily be crumbled between the fingers like charcoal. White fungus growths commonly present on surface.

Differs from Insect Damage

Absence of passage-ways between surface and pockets and of galleries between pockets; lack of frass or powder in pockets; presence of cobwebby white or brown fungus lining the cavities and their margins.

No insect-like holes or cavities, although cracks sometimes develop.

Damage

Rarely if ever found in building timbers; does not continue after wood has been cut into timbers. Attacks both conifers and hardwoods.

"Dry rot" is the most serious cause of wood decay in buildings. Moisture is essential, although it can be transported some distances and seemingly dry wood may decay. Only coniferous wood is seriously attacked.

for use in: RESTAURANTS, DAIRIES, BAKERIES, SUPERMARKETS, FOOD PROCESSING PLANTS, MEAT PACKING PLANTS, GRAIN ELEVATORS, HOTELS, MOTELS, HOSPITALS, INSTITUTIONS, INDUSTRIAL PLANTS.

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› humans and animals. Stainless! No lingering odor.
ive! Non-flammable!

Concentrated formula—contains 0.5% Pyrethrins. Any flying or crawling insect knocked down . . . dies! There are **no** recoveries! Kills even resistant insects.

New "lock open" nozzle makes fogging faster . . . easier! Just push valve to lock open. Hold cylinder aloft and walk at normal pace through building. Push valve to release.

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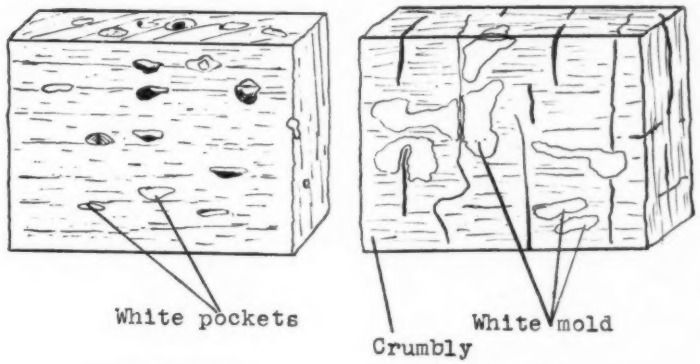

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presence of fungi (or bacteria) to supply additional assimilates, either by the actual ingestion of fungal hyphae and/or by assimilating substances produced by the action of the fungi or bacteria on the wood.

It is generally agreed that, in addition to cellulose, termites need amino acids (from protein), certain minerals, and vitamins for growth and vigor. Definite requirements for these have not been established so a simple deduction based on the compounds in wood would not be accurate.

Sapwood in certain angiosperms (hardwoods) and gymnosperms (softwoods) is reported to contain from 0.1-0.3% nitrogen (inorganic nitrogen and possibly other organic nitrogens may be present). Calculations then would indicate as much as 1.7% sapwood protein in these species. Acid hydrolysis of the protein would yield a variety of alpha-amino acids. However, it appears doubtful whether the reported pH of 3.0 in a section of the digestive system of certain termites would facilitate any significant production of these amino acids. The role of intestinal bacteria, fungi, and protozoa in the enzymatic decomposition of protein to amino acids is not fully understood. Although this decomposition may take place, the amount of protein present in the wood may be insufficient as a source of amino acids.

Vitamin and mineral requirements and their presence in wood have not been detailed sufficiently to allow conclusive statements.

Experiments designed to help elucidate certain termite-fungi relationships have been initiated at the Koppers Research Center. Preliminary results indicate that the growth rate of the individual members of a colony may be increased by utilizing fungal-infected rather than uninfected wood as the food source. In our tests both "brown" and "white" rots are employed. Those decay fungi which preferentially attack mainly the cellulosic elements of wood and thus leave high residuals of lignin are classified as brown rots; those which generally attack all components are known as white rots.

Thus far, a significant difference has not been found between the use of sterilized decayed wood and unsterilized decaying wood as the nutritional source. It has been further observed that the termites will clear a portion of the wood surface of fungal mycelium and then attack the wood. Invariably the insects, at low population levels, do not clean the entire wood surface of mycelium before commencing the ingestion of wood-fiber particles.

Continued study is necessary before these results can be considered valid. Additional experiments utilizing termites which are free of wood-destroying fungal and bacterial infection must be designed and originated before certain termite-microbial nutritional relationships are clarified. Thus, because of the paucity of available conclusive data, the question of the necessity for the presence of fungi or bacteria for the prolonged subsistence of subterranean termites has not been resolved.

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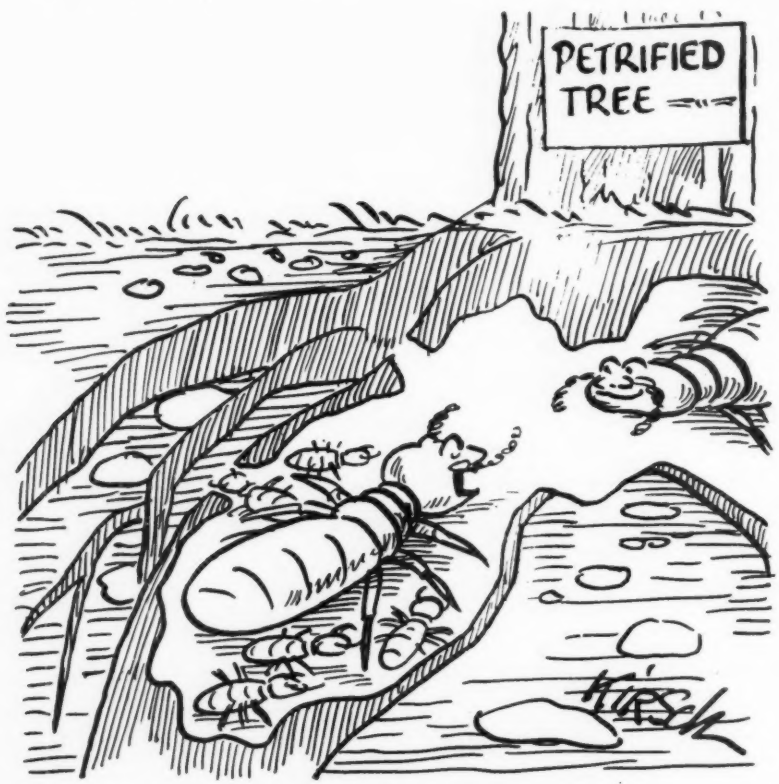

"---Why I was laying 30 to 31 thousand eggs a day, until we started in on this darn treee!"

Radioactive Tracers Show How Termites Feed Colonies

Researchers at the University of Hawaii in Honolulu are using radioactive isotopes to learn the feeding habits of termites.

Miss Elizabeth McMahan, biologist at the University, builds termite houses, or termitaries, of six wooden tongue blades (the kind used by doctors) bolted together at each end with a small termite chamber in the center.

Into the center chamber of each house, Miss McMahan places a wingless king and queen termite. At regular monthly intervals each house is opened to see how colonies are developing.

To conduct feeding tests, Miss McMahan soaks termitaries in a radioactive isotope solution. The termitaries are then dried and the termites permitted to live in them. When the occupants eat the "hot" wood they, in turn, become "hot," and the biologist can see how fast food travels throughout the colony and how various castes are fed.

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Many of your present PCO customers are troubled with weeds and brush that are more than a nuisance. This overgrown vegetation creates fire and safety hazards, hampers men and equipment at work. But it offers new profit opportunities for you. You can solve weed and brush problems readily by making *chemical vegetation control* part of your selling program.

Besides selling the many good prospects on your present customer list, you can use chemical vegetation control to open the door for new customers . . . who will subsequently want other pest control services. And modern vegetation control with Dow chemicals will provide profit-producing work for your crews during off-peak times.

Simple, low-cost equipment does the job. And Dow, your present supplier of prescription-type fumigants, provides a full line of chemical killers that your men will find easy to use expertly. There are Dow chemicals to control weeds, brush, grass—in fact, any type of vegetation—so you can offer *complete* vegetation control services.

Get complete information about this extra-profit opportunity that will make better friends of present customers and expand your business to new ones. Write THE DOW CHEMICAL COMPANY, Agricultural Chemicals Sales, Dept. 210DS2, Midland, Michigan.

THE DOW CHEMICAL COMPANY · MIDLAND, MICHIGAN

American Pest Control's mobile workshop for termite control is a converted Ford tank truck with 1,000 gal. capacity. Seven compartments on sides hold chemical concentrates, tools, pumps, accessories. Lower left picture shows Hydromotor chemical proportioning unit which is connected to large hose reel in adjacent compartment. Spare tire is kept behind doors at the rear.

Dale Gause, Muncie, Indiana PCO, Designs Own Truck for Termite Work

With the increasing volume of termite work he was realizing, Dale D. Gause decided he should have a truck especially equipped for such service. He's constantly keeping his eyes open for new ideas to outfit his American Pest Control Company in Muncie, Indiana, with the best tools he can afford. In keeping with this goal, Gause set out to design his own termite truck based upon what he knew he'd need in the field and upon similar vehicles he had seen and read about.

The results are pictured above.

He started out with a Ford tank truck that had a 1,000 gallon capacity. This he had divided into six separate tanks: one holding 300 gallons, two with 200 gallon capacity each, and three that hold 100 gallons each.

Base oils and water are the only liquids carried in the tanks, since all chemical concentrates are stored in five-gallon plastic jugs carried in the vehicle.

On each side of the huge compartmentalized tank is room for equipment, hose, pumps, and tools. There are a total of seven sections in which to store accessories in this compact, mobile termite control "field station."

The unit is equipped with a large hose reel and hundreds of feet of hose so Gause can unwind just the proper length needed for each job without having extra hose on the ground to get damaged and in the way of his termite crew. The hose is connected, through a compartment divider, to a Hydromotor Model R-3 pump to properly mix the carrier with the chemical chosen for each job. The Hydromotor is hooked up to any one of the six solution tanks with a short hose connection. A quick change from one tank to another can easily be made.

An electric pump is used for water pressure.

Compartments on the other side of the tank hold shovels, rakes, drills, chemical jugs, extension cords, overalls, gloves, and everything else Gause uses for either corrective termite work or soil pretreating. One section has several small shelves ideal for his small hand tools.

With all the compartments closed, American Pest Control's termite truck doubles as a traveling advertising billboard when being driven about the area in and around Muncie. Dale Gause had the vehicle painted white and then colorfully lettered with his company name and type of service in huge display lettering on

(Continued on page 64)

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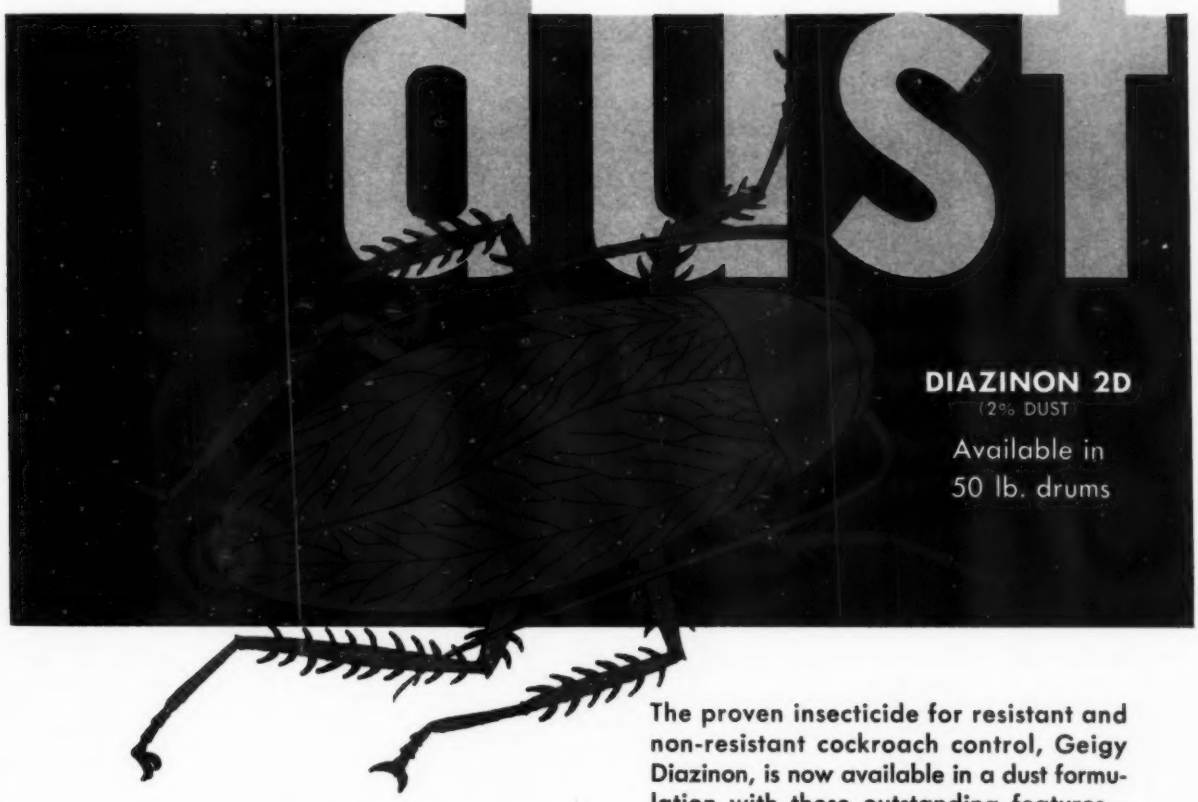

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A Southern Builder Talks To Termite Operators

Based upon an address given at the 1959 NPCA convention

about the far-reaching significance of the FHA's 5-year warranty for soil treats

By

J. M. POWELL, JR.

Residential Developers, Inc.
Baton Rouge, Louisiana

PEST CONTROL operators have been in the limelight since the Federal Housing Administration followed the Building Research Advisory Board recommendations and put in their new Minimum Property Standards soil poisoning as an acceptable means of termite protection in residential constructions it insures. The other four acceptable means are: 1. Concrete foundations, 2. Metal shields, 3. Reinforced concrete foundation caps, and 4. Treated lumber.

State Requirements Lower

From the builder's viewpoint, much confusion prevails in the advisability of using soil poisoning as a prime method of termite protection when submitting his plans and specifications for approval. This results from the inclusion of the five-year warranty that has to run from the builder to the home owner. Since a bond or guarantee from the operator does not release the builder, irrespective of the responsibility of the operator, we as builders do not consider this reasonable.

Aside from our concern over what might happen to us, say three years hence, in the event of a serious infestation problem and the possibility of being unable to enforce promises or guarantees by termite operators for extended periods, many of us cannot understand why BRAB made such a blanket recommendation. Several states limit the guarantee period. Regulations of the Louisiana Pest Control Commission, for example, say, "A licensee to engage in termite control work must enter into a contract with his client for a period of not less than and not more than two years to control or prevent or keep the premises clear of termites including spot treatments."

The surprising thing to me is that for neither the termite operator nor the builder does FHA admit or imply that the owner has a responsibility for care, protective maintenance, or even responsibility of notice throughout the five-year period.

It would seem that the PCO's interest is in how does his prospective customer, the builder, feel about termite protection through the soil poisoning process? I would say the builder feels pretty strongly about it. Unfortunately, that feeling develops into an attitude of indifference because of some of the responsibilities we have just been discussing.

You in your business, as I in mine, have to be cost conscious. When we look down the list of five optional methods of termite protection and see that with a concrete slab or termite shields (which most would use regardless) soil poisoning is not necessary, there is a tendency for us to forego the expense of soil treats and let the homeowner work out his own salvation at a later date. Consequently, builders are adopting the attitude that since the FHA doesn't require it, why put it in?

But don't write pre-slab treatment off as a lost cause. I don't think you should. It is yet to arrive. Problems associated with the five-year warranty are only temporary. Some very firm positions will be taken by all of us and then we will all get together. A general misunderstanding now exists.

Better Selling Job Needed

In my opinion PCOs have done a far better job selling existing homeowners on the value of their service than they have builders on pretreatment methods. Doubtless there was ample justification for this in the past. The present and future point to a vastly different circumstance. With allowances for economic breathing spells and adjustments, our economy and birthrate will necessitate new home construction of approximately two million annually by the middle sixties as compared to the one million plus new homes being built today. I do not think PCOs employ real selling as far as the new house, and particularly the speculative house, builder is concerned. Termite men have generally let the agencies, and their ability to quote a better price than their competitor, do their selling. The tendency is to look for the renewal contract or "the gravy part of the deal," as I suppose we all call it.

It would be foolish for me to try to tell termite operators how to run their business because I have more than enough trouble trying to run my own. However, let me make a suggestion or two. Certain suggestions have been made to PCOs, which if done, would be powerful sales tools in dealing with and making sales pitches to builders.

I have yet to have a termite operator offer to put a sticker in one of my houses that told me his name and how I might contact him. This suggestion has been made to every PCO with whom we do business not once, but several times through group meetings or through one of your publications.

Never has an operator suggested anything like coupling pipes being put through the slab footing of one of my houses so chemicals could be injected later if needed. It may be that I wouldn't want them, but the chances are that this could prove to be a potent sales tool with the builder.

(Continued on page 42)

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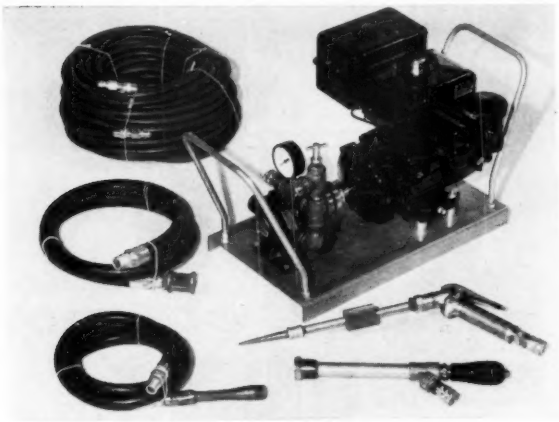

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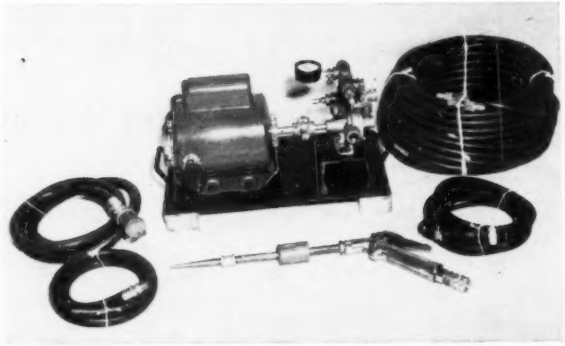
Nos. 6500 & 7500 especially adapted for pre-treatment termite control

No. 6500: 3 hp Briggs & Stratton gas engine, gear reduction 600 rpm.

lb. pressure	0	50	100	150	200
Gal. per min.	10.00	8.00	6.00	4.50	3.00



T&P 53, ½ hp electric motor. Hypro 612, Multi-use unit for termite control

lb. pressure	0	25	50	75
Gal. per min.	5.25	4.33	3.50	2.66

By Associated Sales and Supply Co.

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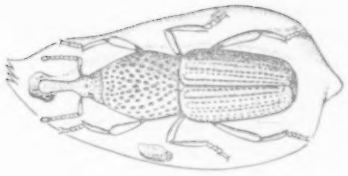
Methods of Detecting Hidden Infestations in Grain[1]



by PHILLIP K. HAREIN

Instructor and Assistant Entomologist
Kansas State College
Manhattan

AN IDEAL method for detecting hidden infestations in grain should have the following characteristics:

1. Be fast, economical, simple and accurate.
2. Specify the insect's life stage. This might indicate the extent of kernel damage and possible insect fragment contamination.
3. Indicate whether the insect is alive or dead.

All methods used today lack one or more of these desired characteristics.

Various methods of detecting hidden infestations may be conveniently grouped into five categories:

Visual methods without a previous kernel treatment: The Food and Drug Administration suggested that every kernel containing an insect emergence hole indicates approximately five times that many kernels infested with internal insects. Examining a large number of kernels for emergence holes is both tedious and laborious and at best gives only a gross estimation of the hidden infestations present.

Visual methods with a previous kernel treatment: With a sectioning method, developed at the University of Wichita (1950), the grain kernels are partially submerged in a flat bed of quick drying cement. The cement hardens, half of each kernel is sanded off, and the remainder of the kernels in the cement are exposed to ultraviolet light. The infested kernels will fluoresce because of insect waste products present. This method is laborious, time consuming, and inaccurate. The insects' waste products lose their ability to fluoresce after attaining a certain age, subsequently, old infested kernels are unnoticed.

A. C. Apt (1950) suggested using a strong alkali solution such as sodium hydroxide to partially digest wheat kernels to the point where they become sufficiently translucent so that internal infestations could be seen. This method has not proved practical.

Staining Methods

All staining methods utilize a chemical which stains the gelatinous egg plugs in the kernels. The most successful stains are acid fuchsin developed by J. C. Frankenfeld (1948), gentian violet developed by H. J. Goossens (1949), and berberine sulfate developed by Milner et al. (1950). Methods of preparing and using these these stains follow.

Acid Fuchsin

1. Prepare the dye solution:
   a. Weigh 0.5 gm. of acid fuchsin.
   b. Mix 50.0 cc. of glacial acetic acid and 950.0 cc. of distilled water.
   c. Add the acid fuchsin to the glacial acetic acid and water mixture.
   d. This dye solution can be stored a long time and may be used repeatedly until it becomes murky.
2. Soak the grain to be treated 5 minutes in warm water.
3. Drain off water and cover grain with acid fuchsin solution for 2 to 5 minutes. If left longer, the kernels may absorb enough solution to make identification of egg plugs difficult.
4. Pour off dye solution (retain for future use) and wash grain in tap water to remove excess dye.
5. Examine kernels to locate gelatinous egg plugs which stain a deep cherry red.

Gentian Violet

1. Prepare a 1% gentian violet aqueous stock solution.
2. Weigh 5 gm. of the wheat sample and soak 30 seconds in warm water containing a detergent.
3. Drain off excess water by placing the sample in a wire strainer, wash, then put wet wheat on a dry towel a few seconds.
4. Expose the wheat for 2 minutes in a solution which contains 10 drops of the staining solution (1% gentian violet aqueous stock solution in 50 ml. of 95% ethanol).
5. Pour off staining reagent and wash the wheat sample 20 seconds in clear water.
6. The weevil egg plugs stain purple and are very easily seen while the kernels are still wet or in the water. Gentian violet does not stain the endosperm of the wheat kernel.

Berberine Sulfate

1. Prepare an aqueous solution containing 20 ppm. of the alkaloid, berberine sulfate. Twenty ppm. is equivalent to 0.002%.
2. Soak the grain in this solution 1 minute.
3. Examine the kernels under ultraviolet light. The stained egg plugs will fluoresce an intense yellow. Feeding punctures and mechanical injuries do not fluoresce.

The major disadvantage of the acid fuchsin stain is that it will also stain the endosperm of the wheat kernel in areas where the bran coat is broken either by mechanical injury or insect feeding. Although the endosperm stains a lighter color than the egg plug, it is difficult to differentiate the stained areas in some instances; consequently, there is a possibility of overestimating the number of egg plugs. The berberine sulfate and gentian violet will not stain the endosperm of the kernel. No staining method of detecting internal infestations gives evidence as to the stage of the developing insect or whether or not the insect egg ever hatched.

Chemical methods: Howe and Oxley (1944) developed a method of determining the degree of in-

1. Contribution No. 727, Department of Entomology, Kansas Agricultural Experiment Station, Manhattan.

sect infestation by measuring the amount of carbon dioxide produced by insect respiration. This method is not adaptable as a fast, economcial test.

A spectrophotometric analysis method developed by Potter and Shellenberger (1952), measures the concentration of a hydroxphenol present in insects. This method is inaccurate and too complex for practical purposes.

Cracking Flotation Method

The cracking flotation method for determing hidden infestations, is being used by the Food and Drug Administration for regulatory purposes. The various steps used in this procedure are listed below.

1. Clean the sample of wheat using an Emerson or Grain Dockage Kicker.

2. Reduce the sample to 125 gms. by using a Boerner Divider.

3. Using a burr mill, grind the wheat as coarse as possible.

4. Weigh 100 gms. of ground wheat into a Wildman trap flask.

5. Add 500 ml. of hot water (85-90°C.) to the ground wheat and mix thoroughly. Warm water can be used if the wheat and water mixture is heated together on a hot plate.

6. Stir intermittently 5 to 10 minutes.

7. Cool to 35-40° C.

8. Add gasoline to the trap flask, mix thoroughly, and fill the trap flask with cold water.

9. Allow the mixture to settle and filter off the trapped gasoline layer.

10. Add water to fill the neck of the trap, stir the sample, and trap off the gasoline layer again if necessary.

11. Examine the material trapped off microscopically for insect fragments.

The number of insect fragments in the sample is an indication of the number of hidden infestations in the wheat sample. This method is time consuming and considerable practice is necessary to accurately differentiate between insect fragments and bran particles.

Aural Method: An aural method, developed by Adams et al. (1953), is based on amplifying sounds produced by insects in grain kernels. The method would merely indicate the presence or absence of hidden infestations.

Physical Methods: Katz et al. (1954) developed a projection method of salvaging uninfested grain from infested mixtures. Grain is projected into still air from a moving belt. The kernels separate according to shape, size and surface structure as they are acted upon by gravity and air drag. Infested kernels, being relatively light will fall short of uninfested kernels.

Milner et al. (1953), developed the air blast method which separates infested kernels from uninfested kernels on the basis of air drag. Insect emergence holes increase the air resistance of the kernel so that a gross separation may be attained.

Simple Flotation Method

The flotation method of determining hidden infestations developed by G. D. White (1956), United States Department of Agriculture, separates infested from uninfested kernels by applying specific gravity. The procedure is as follows:

1. Mix sodium silicate (water glass) and water in a 50:50 proportion. Note: Sodium silicate (water glass) is available from nearly all drug stores.

2. The specific gravity of the mixture will be approximately 1.190. This should be checked with a battery tester.

3. Submerge the wheat sample in the solution and stir the mixture.

4. Fifty to 70% of the infested

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kernels in the sample will then float.

The solution may be used repeatedly. The method will not determine the exact number of infestations but is valuable on the basis of its simplicity.

The radiographic method for determining hidden infestations is the most accurate and objective technique used today. This method was developed by Milner et al. (1950). A representative grain sample is exposed to X rays and the degree of X-ray penetration is recorded on film. The grain kernels are examined for hidden infestations by inspecting the developed X-ray negative.

The radiographic method is unique from all other methods in that it is possible to determine the stage of the immature insect, determine whether or not the insect is alive or dead, and estimate over-all depletion of the kernels resulting from internal insect feeding. The principal objection to this method is the cost of installation and operation which may limit its use to the larger grain handling companies.

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Grain Seizures Up

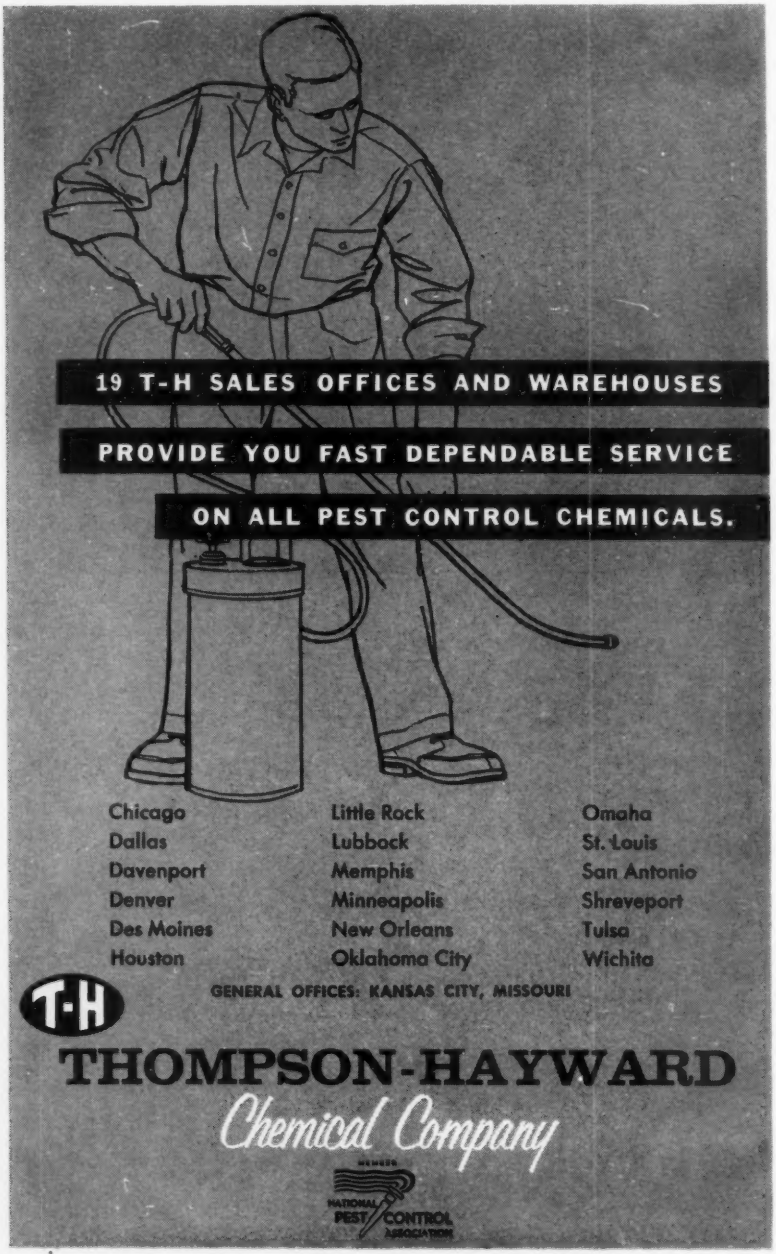
From the start of the Federal Government's "Clean Grain Program" in January 1955 through August 1959, the Food and Drug Administration has seized 208 cars of wheat because of rodent contamination, according to the Lafayette, Ind. based district headquarters of the U. S. Fish & Wildlife Service.

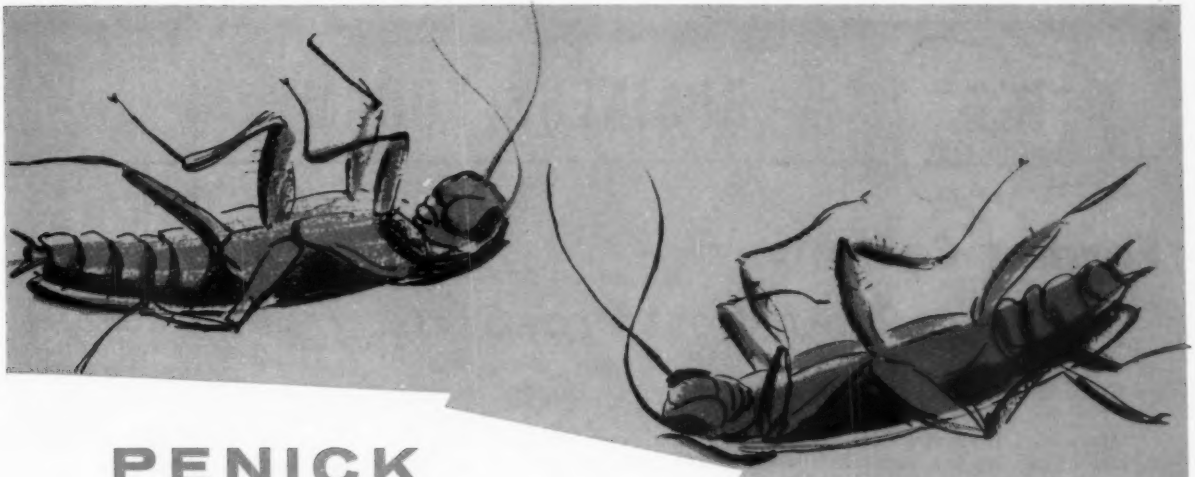
While the bulk (70%) of the seizures involved shipments from four of the main wheat producing states of North and South Dakota, Montana, Nebraska, 21% originated in the North Central States which include Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin.

For this North Central area, there was one seizure in 1955, four in 1956, seven in 1957, ten in 1958, and 22 to date in 1959.

F&WLS district agent in this region, Galen C. Oderkirk, commented that the greater number of seizures does not necessarily mean an increased incidence of contamination, but rather an increase in Food and Drug inspection activities.

Neglect of careful rodent control measures can result in downgrading grain with resultant economic losses to farmers and elevator operators.





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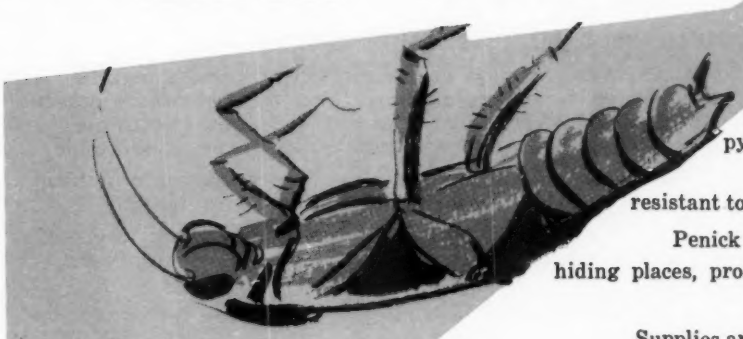

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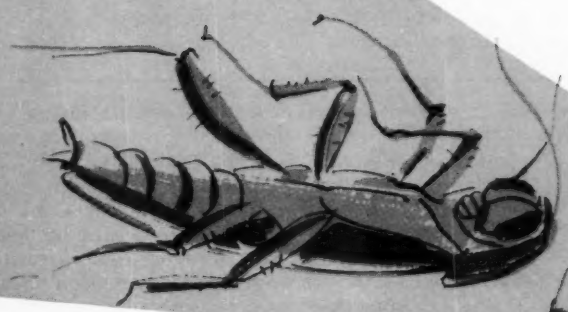
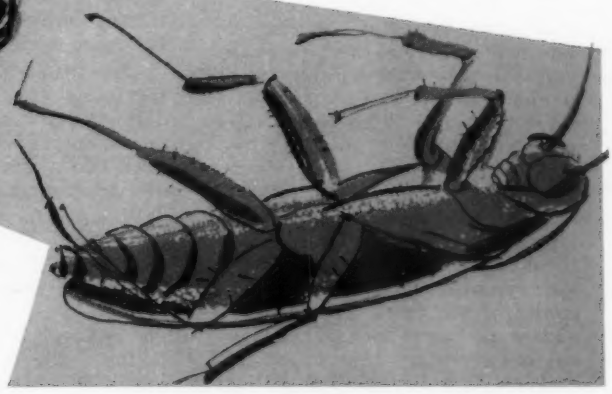
Penick Powdered Pyrethrum drives roaches from hiding places, produces quick kill, reduces infestations fast.

It's safe and easy to use. Economical, too. Supplies are ample and conveniently warehoused to give you fast service wherever you're located.

We'll gladly supply you with additional information on powdered pyrethrum and offer recommendations on any of our widely-used pesticides. A call or post-card will quickly bring data and a convenient check-list order form to simplify your purchasing.





PENICK

Pest Control Supply Department

S. B. PENICK & COMPANY

100 CHURCH ST., NEW YORK 8 • 735 W. DIVISION ST., CHICAGO 10

Former Customers Are Your Best Prospects

By M. A. PATRICK

"My best prospects are my former customers", a progressive eastern PCO insists. He bases his claim on the fact that since he has once demonstrated the effectiveness of his techniques to these property owners, they are more inclined to listen attentively to his follow-up solicitations.

His firm consists of three servicemen, a secretary, and himself as owner-operator. They concentrate on servicing owners of private homes and former residences that have been converted into multiple family dwellings in the city-suburban area within a five mile radius of the company's headquarters. By limiting his travel, it is possible for this PCO to reach any home or apartment within minutes and at a minimum of cost.

But it is his follow-up methods that distinguish his operations. In these, he combines mail material with telephone calls carefully timed to reach property owners when they may be most receptive to his suggestion of a return visit. These efforts are directed to those who have used his services for a one-time treatment of their properties and others whose contracts have expired.

Pertinent information about each customer, i.e. name, address, date the homeowner became a customer, type of service requested and rendered, plus any callbacks, is recorded on an alphabetized 3 x 5 file card for later reference. This is the company's permanent customer record.

A second file, called a "tickler," is used for the firm's follow-up. This is a low-cost, top-of-the-desk file that has twelve major separations, one for each month of the year. Into these divisions go paper memos that signal the secretary that follow-ups are due. For instance, if the last call on a contract was made on the 30th of the month and the customer could not be sold on the value of renewal, the property owner's name, address and type of service previously rendered is marked on a memo and dated two months in the future. It is then placed in the "tickler" for that time.

Each morning the girl in the office checks the "tickler" file for memos dated for that day. Customers whose names appear on the slips are mailed a square, formal-looking envelope with an enclosed card, that appears like it was individually typed, using the sales appeal shown above.

A profitable percentage of those receiving this mail follow-up agree to a return call. Equally important, about 12% of them take out a new service contract of from four to twelve calls.

When a former customer does not telephone or write within 72 hours, a call from the PCO's office is put through either by the firm's owner or his secretary. This conversation is opened by asking, "Mrs. Smith, this is Frank R..... of the XYZ Company. I'm calling to ask if you received the card we mailed you a few days ago?" The value of the service suggested on the card is then mentioned, but the selling technique varies from this point on depending upon the prospect's response. If the lady claims that she has had no trouble, the reply is, "That's to be expected, Mrs. Smith, since our work can be relied on." This is immediately followed by emphasis on the importance of preventive service that will continue the pest-free condition. About one out of four of these calls results in an agreement to have a service representative visit the former customer's home or apartment. During these visits, attempts are made to sell contract service.

During the follow-up telephone calls, there are occasions when a housewife indicates by her voice that she does not wish to continue the conversation. Since this may be due to personal reasons such as the presence of a visitor at the time, the call is cut short immediately with the question, "Will it be satisfactory for me to call you tomorrow at this time, Mrs. .....?".

Certain follow-up methods have been found effective in stepping up results. The return card, enclosed with the mailing piece, for instance, is not returned by very many of the prospects, but there

YOU'LL WELCOME THIS INVITING OFFER . . . .

The pest-free condition we brought to your home should be checked on from time to time. You then eliminate possible danger to children and embarrassment when guests are present. Too, you and your family feel more comfortable.

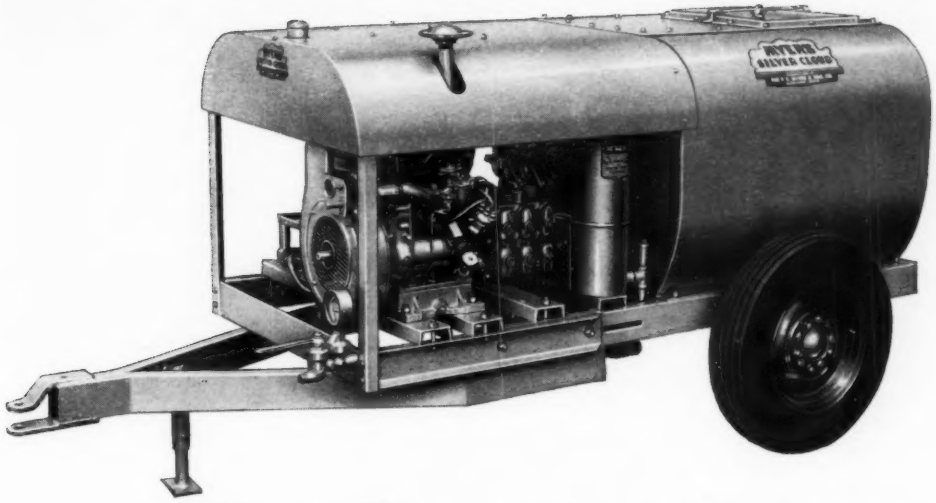
It is less expensive to prevent pests from becoming a problem than it is to eliminate them if they are left to multiply.

Instead of delaying until the need becomes urgent, why not telephone us today. Or use the enclosed card to specify the day and hour that will be convenient for our visit.

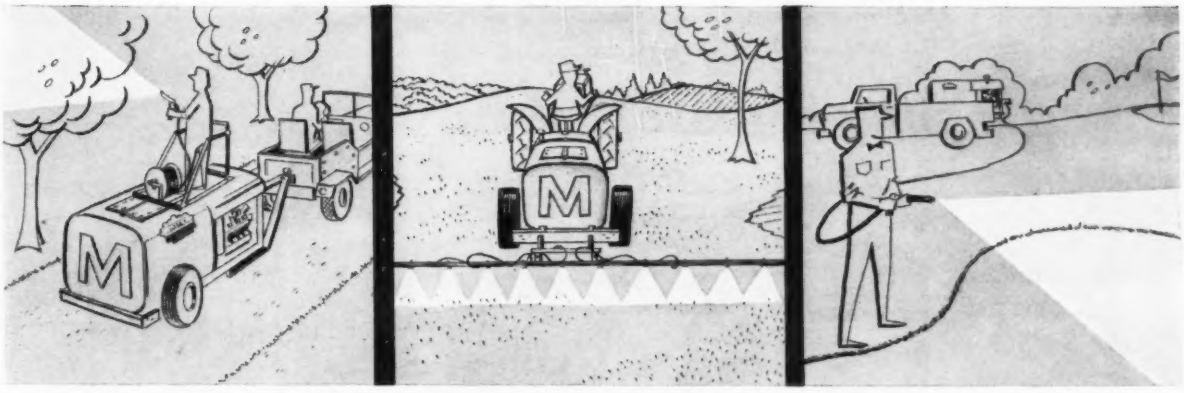
Our current low prices will interest you—and save you money.

The X Y Z Company
TRinity 9-6446

Act now while you are thinking of this important matter. You'll be glad you did.



New Myers general purpose sprayers give VERSATILITY, PLUS unmatched spraying performance



Equipped with tower and hose reel for fast moving, efficient sprayer performance.

Used with boom, this adjustable pressure-high capacity unit is perfect for weed control.

From shade trees to greens, the highly maneuverable skid model gives economical protection.

Available in two-wheel trailer type or skid models, Myers General Purpose Sprayers provide **low-cost protection** on many different spraying jobs. Epoxy-coated tanks last years longer—resist the most corrosive spray chemicals. Ruggedly built, easy to handle, this compact sprayer operates at pressures from 50-600 lbs. with 20 gpm. capacities.

For complete information and prices on these new sprayers and accessories, see your Myers Sprayer Dealer or write to:

Myers **The F. E. Myers & Bro. Co.**
ASHLAND, OHIO KITCHENER, ONTARIO

is evidence that some are given to friends and relatives. It also has been found desirable to make the mailings early in the week so that those interested may arrange for a service call before the week end. This mail scheduling has the added advantage of permitting follow-up telephone calls by Wednesday or Thursday.

Incidentally, it has been this PCO's experience that most of his customers do not welcome his visit on Saturday. The exceptions are in those instances in which both husband and wife are away from the home during the period from Monday to Friday. Some prefer service calls in the evening. The company head tries to discourage these in all cases, but if necessary he will take care of the servicing himself rather than run one of the men into overtime.

The cost of this continued selling effort is relatively slight in terms of the dollar results it produces. Except for the processing of the cards, all the other details are handled as part of the secretary's regular daily work. She does the addressing, stamping and mailing between her regular duties and when things are slow, may prepare the follow-up pieces in advance of actual need.

This PCO keeps after his customers to bring in immediate volume and also to build name recognition that may prompt those he serves to mention his services to others. Collectively, all his efforts pay dividends.

A Builder Talks to TOs

(from page 32)

We builders are always looking for those little extra items to offer our customers.

Any sales-conscious builder wanting to enhance his own reputation is going to consider a PCO's offer irrespective of any FHA or VA requirement if the contemplated construction is in an area of possible serious infestation.

Skepticism to be Overcome

In my opinion, most builders today do want to use soil treatment in new house construction in areas of infestation. However, much skepticism dwells in their minds as to whether or not they are getting what they are paying for and whether or not pretreating provides both protection and additional sales advantages for their houses. This skepticism prevails because of poor judgment on the part of some operators, inadequate knowledge of the business, and in plain words "fleecing," coupled with poor publicity and job failures due to the malpractices of a few. Similarly, we members of the National Association of Home Builders suffer from the malpractices of some of our members. There are a substantial number of PCOs who are associate members of our NAHB. Such membership provides for numerous contacts between us, a lot of idea exchanges, and often results in favorable business transactions for each of us.

As a builder, my observation has been that too many termite men take for granted that the builder generally knows the benefits provided by their soil treatment service and that he is somewhat remiss if he doesn't order the service. From my operating experience in several different areas of the country, I feel termite people should take another look at their sales approaches and ascertain whether or not they can't be more solid in what they have to offer; particularly in what they are giving the builder for his money and how his customer is going to subsequently benefit. Every builder needs good sales ideas and will welcome any valuable ones PCOs can give him.

Timing Sales Approaches

At what time, we might ask ourselves, does the builder first consider the need for termite protection? The logical answer is in the initial planning of his construction and in the putting together of his plans and specifications. It is at that time he must decide which precautionary measures he must take and the methods he will use.

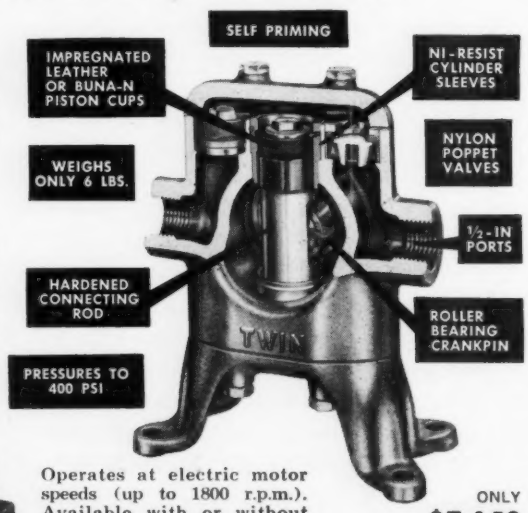
As most PCOs know, the guiding standard for residential construction which has accounted for the volume of speculative building throughout the country in recent years, has been the old FHA Minimum Property Requirements. Today, we have a completely new guide. Although it embodies many of the old practices and rules, this new MPS represents quite an achievement in general uniformity throughout the country. Obviously, in a com-

Here's Hypro's new

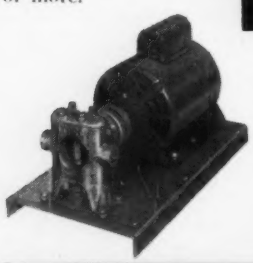
2-cylinder piston pump

for pressures up to 400 lbs.!

Just in time for termites!



Delivers up to 3 gal./min., pumps all pest control materials including powder suspensions and fumigants. Compare with piston pumps selling for $150 or more.



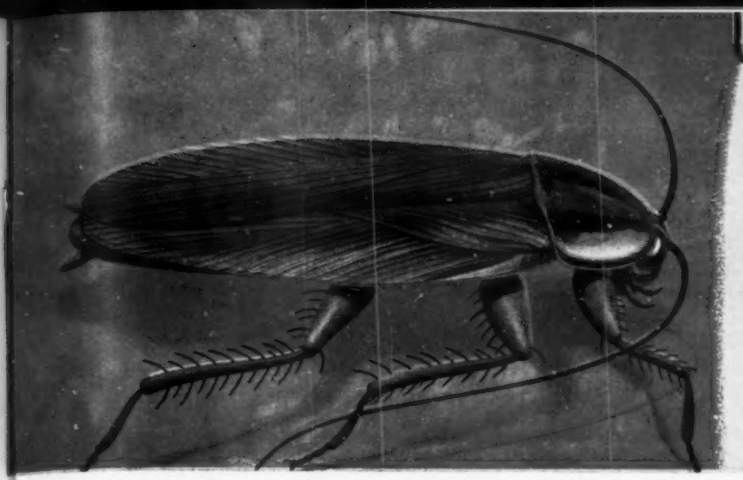
Operates at electric motor speeds (up to 1800 r.p.m.). Available with or without motor.

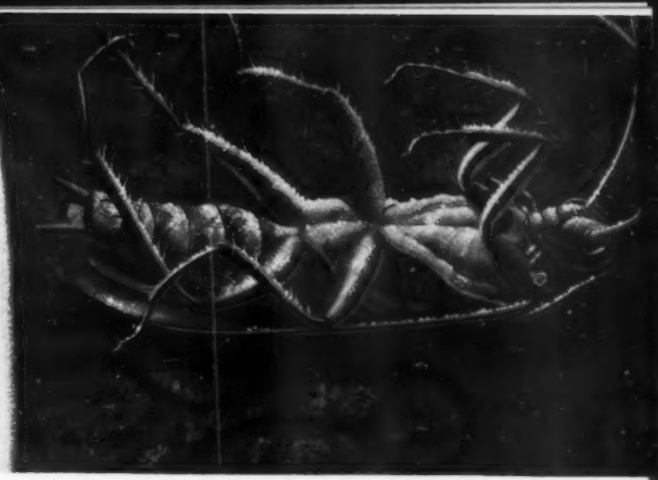
Write for piston pump data sheets.

ONLY **$54.50** FOB factory

Hypro *Engineering, Inc.*

706-39th Ave. N.E., Minneapolis 21, Minn.





DAVISON Dri-Die

NEW TOOL speeds application

Dual Roll-Puff Applicator now available . . . lets you draw a line . . . get into corners for amazing kill and control

Now, Davison Dri-Die 67, praised by pest control operators from coast-to-coast for effective kill and control of roaches, fleas, dry wood termites and other insects, may be rolled or blown from Davison's new Dual Roll-Puff Applicator.

Just an easy motion with the polyethylene container and its roll-on attachment and you draw a line across which an insect moves only to die . . . a squeeze with the nozzle attachment and a puff of Davison Dri-Die is blown into those hard-to-get-at spots in wall spaces, attic areas, switch boxes, etc.

The new Davison squeeze dispenser is available through your favorite distributor of pest control chemicals and equipment.

W.R. GRACE & CO.
DAVISON CHEMICAL DIVISION
BALTIMORE 3, MARYLAND

W. R. Grace & Co., Davison Chemical Division
Baltimore 3, Maryland

Send me complete Dri-Die® Data File, free

Name..... Title.....

Company.....

Address.....

City..... Zone.... State....

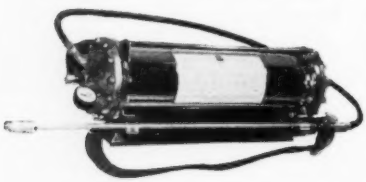
***Here's what* CLAUDE C. WEAVER**
owner of Weaver Extg. Service of Washington

Says about

BANTA HI-FOGS

"Hi-Fogs are doing a fine job for us here in Washington. We like them and plan on more for next season."

INCREASES EFFICIENCY - CUTS LABOR COST
COSTS ONLY A FEW DOLLARS A MONTH
ENDS REPAIR PROBLEMS
PROVIDES TRADE-IN PLAN
PROVIDES FREE CONSULTANT SERVICE



GET THE FACTS
on
Lease & Save
from
BANTA HI-FOG COMPANY
812 Truckway Montebello, Calif.

Banta Hi-Fog Company
812 Truckway, Montebello, Calif.
Please send me immediately additional information on Banta "Lease & Save" program; I am also interested in:

__ **Trade-in Plan**
__ **Free Consulting Service**
__ **Lease & Save Program**

Name_____
Company_____
Address_____
City_____ Zone____ State____

pilation as voluminous as this, many deficiencies will exist. Unhappily, the worst one, or at least more controversial, is what we are talking about here, primarily because of the guarantee requirement for soil treatment, not the method itself.

At the NAHB National Board of Directors meeting in St. Louis last September, the directors framed and voted a resolution requesting FHA to eliminate soil treatment from the list of optionals for termite protection unless this guaranty provision was removed. The implications of the guaranty are far reaching. If FHA can require the builder to be responsible for termite protection of the house for a period of five years, why shouldn't it require him to be responsible for the house for the period of useful economic life of the property as established by FHA? This one item could be hazardous for the builder in many other ways.

Most builders in areas of heavy infestation are now using the slab or termite shields as the primary protective means, and then for reasons of good business, using soil treatment for more assured protection of the wood members of the structure. To me, this is where PCOs really come in because they have that extra something to offer plus the savings of pre-slab treatment for both builder and home owner.

I think one good thing PCOs could do which would be helpful to them, and something the builder would appreciate, is to give him a little "poop sheet" saying just what soil poisoning is and does, what the owner has a right to expect from it, and what preventive maintenance measures should be taken by the owner so as not to encourage termites (like not planting heavy shrubbery against the house or building trellises or other wood structures against the house using untreated lumber and the like).

Okla. OK's 19 Termiticides

In the latest revision of the Oklahoma Structural Pest and Termite Control Law, 19 chemicals are approved for termite control.

They are: sodium arsenite, pentachlorophenol, orthodichlorobenzene, trichlorobenzene, nitrochlortoluene, creosote, tetrachlorophenol, betanaphthol, tar acid oil,

(Continued on page 58)

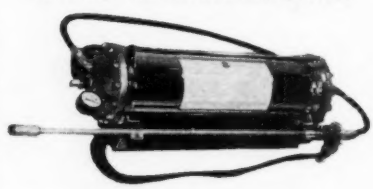
***This is what* MERLE WEAVER**
owner of Weaver Extg. Service of Oregon

Says about

BANTA HI-FOGS

"Ray Dewey recommended Hi-Fogs to us and the fact that Ray has more than 50 led me to place my initial order. Our Service Manager thinks very highly of the Hi-Fog."

INCREASES EFFICIENCY - CUTS LABOR COST
COSTS ONLY A FEW DOLLARS A MONTH
ENDS REPAIR PROBLEMS
PROVIDES TRADE-IN PLAN
PROVIDES FREE CONSULTANT SERVICE



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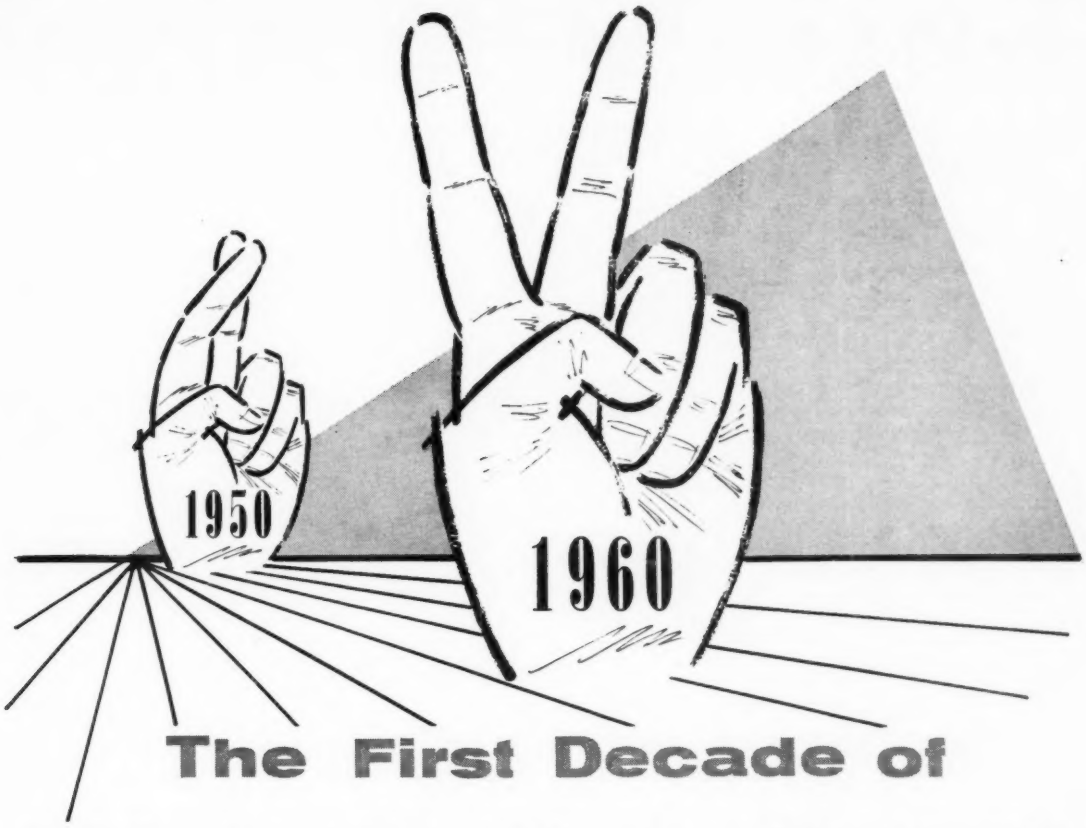
812 Truckway, Montebello, Calif.
Please send me immediately additional information on Banta "Lease & Save" program; I am also interested in:

__ **Trade-in Plan**
__ **Free Consulting Service**
__ **Lease & Save Program**

Name_____
Company_____
Address_____
City_____ Zone____ State____



The First Decade of WARFARIN

Ten Years of Better, Surer, Safer Rodent Control

Prior to the introduction of warfarin in 1950, effective rat and mouse control required of the Pest Control Operator a combination of skills including an intimate knowledge of poisons (and their antidotes), experience in rodent habits and rodent lore, an inexhaustible supply of patience, an occasional touch of intuition . . . *and maybe crossed fingers as well.*

Prior to 1950, prebaiting preceded baiting. Quick-acting poisons had to be carefully protected and just as carefully removed on the following day. Bait refusal and bait shyness were all too frequent obstacles to satisfactory bait consumption.

The fact that PCOs were nevertheless able to combat rats under these conditions is a tribute to their conscientiousness and skill.

Then in 1950 . . . with the coming of warfarin . . . those fingers could be, at last, uncrossed.

No more prebaiting, no more bait shyness or refusal, no more mixing fresh perishable baits every day, and no more picking up uneaten leftover baits on the morning after.

No longer hazardous or uncertain, rat control is accomplished in safety with warfarin, and with every assurance of success.

WISCONSIN ALUMNI RESEARCH FOUNDATION

P. O. Box 2217, Madison 5, Wisconsin

What's NEWS In The Industry

Next Ala. Exam March 15; Covers 15 Subjects

Next examinations for those who wish to engage in professional pest control services in the State of Alabama will be held in five cities on Tuesday, March 15 at 8:30 a.m.

Licensing exams will be given on 15 subjects, any one of which applicants may be tested on separately. They are: control of (1) termites and powder-post beetles, (2) household pests, (3) stored products pests, (4) insect pests of farm animals and buildings, (5) insects and diseases of shrubs and trees, (6) orchard pests, (7) garden pests, (8) insect pests and diseases of pecans, (9) dry rot in buildings, (10) agricultural pests (fungal diseases), (11) insects and diseases of lawns and sods, and (12) poultry pests. The other three fields covered are landscape design, setting and maintenance of plants, and tree surgery.

Tests will be given in these five towns: Birmingham — 1308 1st Ave., North; Decatur — Courthouse (see bulletin board); Gadsden — Courthouse (see bulletin board); Mobile — A.P.I. Ornamental Horticulture Field Station, Spring Hill; and Montgomery — 882 State Office Building.

Persons wishing to take any of these examinations are asked to report to the place most convenient. Those who have already passed the Alabama tests covering services they perform do not need to be re-examined in those fields. It is important that all branch office supervisors be qualified, according to word received from B. P. Livingston, chief of Alabama's Division of Plant Industry.

The permit fee of $10 is to be paid at the time examinations are taken if applicants do not already have a permit.

For more information, write Mr. Livingston, Division of Plant Industry, State Office Building, Montgomery 1, Alabama.

Ent. Society Moves

The Entomological Society of America has now moved into its new home, a converted brick dwelling, at 4603 Calvert Rd., College Park, Md., a suburb of Washington, D.C.

Karl Hassler, who died in January, was always ready to help PCOs with their problems and frequently spent hours on the telephone giving advice and offering suggestions on how difficulties could be solved.

Karl Hassler, Fumigant Expert, Dies in California, Jan. 9

Karl Hassler, 61, long-time expert in fumigants and developer of new fumigating methods, died at his home in Altadena, Calif., January 9.

A graduate of the University of Chicago in 1921, he received his Bachelor's degree after majoring in commerce and business administration. Mr. Hassler worked for the Great Atlantic & Pacific Tea Co. in Chicago and was a supervisor for this grocery chain in Detroit.

In 1939 he came to California to join the Neil A. Maclean Co., a distributor of pesticides and equipment. He managed its Los Angeles office as a company partner until 1958 when he resigned on doctor's orders.

During his 20 years with Maclean, Karl Hassler was closely allied with the pest control industry as a supplier and an advocate of better pest control methods. He instigated a free training school given evenings in the Maclean offices, for California PCOs to help prepare servicemen to pass state and local licensing examinations.

Filling the need for more industry unification in California, Karl became parttime secretary of the California Pest Control Operators Association, Inc. in 1948 and held that post until 1952 when a full-time man was hired for the job.

A frequent contributor to the pages of Pest Control, Mr. Hassler served as this magazine's West Coast representative from 1950 to March 1957. His articles in PC, on soil fumigation with ethylene-dibromide to control subterranean termites, stimulated others to investigate his methods further. He was active in the government Khapra beetle fumigations of a few years back and developed, with his son, Robert K., a gas analyzer to measure accurately the amount of fumigant within a structure under fumigation.

In 1955 he helped form Minx Products Co., a fabricator of tarps, in Los Angeles. Because of his experience in the field of fumigation, Karl Hassler traveled to South America and to Hawaii as a consultant on large gas jobs.

Born in Poplar Bluffs, Missouri, on December 25, 1898, Karl Hassler was the oldest of three brothers and one sister, all of whom survive him, as do his mother, son, and wife, Dorothy K. Funeral services were held in the chapel at Mountain View Cemetery in Altadena, Calif.

CSMA Has Resume of Economic Poisons Laws

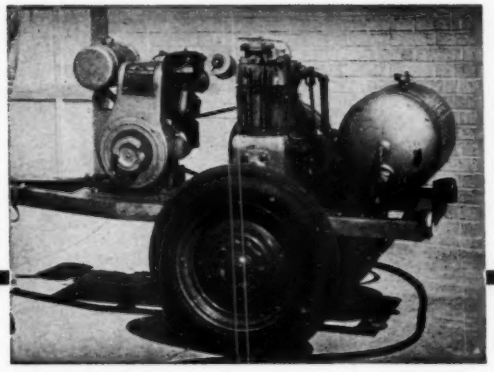
"Compilation of Labeling Laws for Hazardous Substances" is available from the Chemical Specialties Manufacturers Association, 50 East 41st St., New York 17, N.Y. Included in the 114 page, 8½x11, loose-leaf publication, is a compilation of Federal and state economic posons laws.

"Eventually all states will have laws governing the sale of pesticides," H. W. Hamilton, CSMA executive vice-president told PC. "Every year there are changes in the laws and all of the laws differ in certain details, although we have always attempted to promote a uniform system," he said.

"All details of the state laws involved should be referred to by formulators and manufacturers," Hamilton warned. Any sales across state lines involve the individual manufacturer in the Federal registration.

Copies of the CSMA's "Compilation . . . " are available to its members for $3.50 each, and to non-members for $5.00 per copy. Revisions and additions are priced at the time of issue.

SAVE 30%
on Termite Drilling Labor



B&G C-100
Termite Drilling Unit

Tested on the job and proved by experts . . . this powerful unit packs the punch you need to make your job easier . . . and faster!

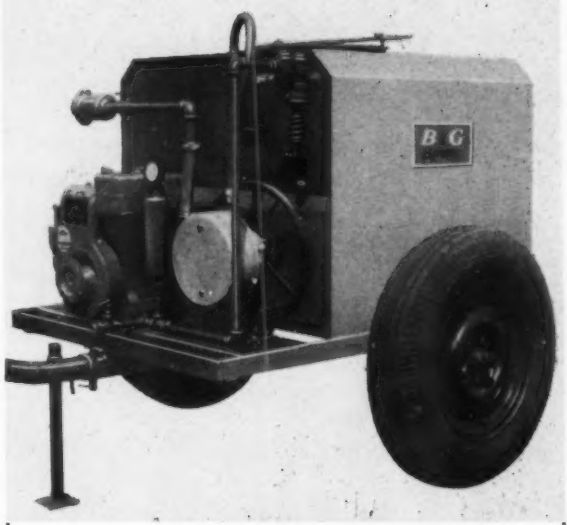
DRILLS 3" OF SOLID CONCRETE IN 30 SECONDS!

- **It Operates Easier**
- **It Saves You Money**
- **It Costs Less to Maintain**
- **It Costs Less to Buy**

Unit is complete with 14-lb. self-rotating jack hammer, 2 drills, 100-ft. air hose and all couplings.

SUPER BiG SPRAY
HAS REAL POWER
SPRAYS UP TO 20 GALLONS A MINUTE

ADJUSTABLE PRESSURE FROM 0 TO 500 LBS. . . . USE IT FOR EVERY TERMITE CONTROL JOB



YOU GET PERFECT PRESSURE FOR EVERY APPLICATION

Versatile, fast and powerful! Use it in soil . . . under slabs . . . for treatment of voids and piers.

Compact, portable and Economical! The BiG Spray is the best business investment you'll ever make . . . the lowest cost unit available with such powerful performance.

4 Ceramic Cylinders guarantee fast, even flow and defy wear. The rugged BiG Spray is lubricated for life with dust and dirt sealed out.

B & G COMPANY

PLUMSTEADVILLE, PA.

Branch Office: 2640 Myrtle Springs Rd., Dallas 20, Texas

Pioneers in Developing New and Better Equipment for the PCO

Kephart, New Neb. Pres.

Ralph Kephart of Industrial Termite Control, Inc., Omaha, is new president of the Nebraska Association of Pest and Termite Control Operators, Inc. He, along with Bill Darbro, Jr., American Termite Control of Nebraska, Aurora, and Earl Carr, Presto-X Co., Omaha, who were made vice president and secretary-treasurer respectively, were elected at the group's annual conference and business meeting late last year.

The two-day session was held at the Castle Hotel in Omaha in conjunction with the University of Nebraska College of Agriculture's Department of Entomology. About 50 persons attended.

E. Pa. PCA Picks Diehl

At its annual meeting, held at the Sylvania Hotel in Philadelphia recently, members of the Eastern Division of the Pennsylvania Pest Control Association picked their slate of officers for 1960.

Elected governor is Frederick P. Diehl of Diehl's Central Service Co., Camp Hill, Pa. First vice-governor is John Bready, Hygienic Sanitation Co., Philadelphia; second vice-governor is Palmer Mattson, McNeil Pest Control Services, West Chester. New treasurer and recorder, respectively are: Charles Greisbach, Bauer Exterminating Co., Philadelphia, and Harry Egner, Reliable Exterminating, Philadelphia.

Committeemen elected to serve in the combined state association are: Alex Ehrlich, Morris Grossman, and Steve Buck.

New odor-masking agent for use in

DIAZINON

Formulations

Developed at the request of many Pest Control Operators, DIASCENT is an amazingly effective odor mask and freshener for finished formulations made with Diazinon. It is usable in oil or water-based products and its wonderful odor-covering power makes it extremely economical. One pound will actually odor-mask 64 gallons of finished formulation! *Why not order a trial pound for your own tests today.*

PRICE:

1 pound $3.20 • 5 pounds $2.95 per pound

AROMATIC PRODUCTS INC., 235 Fourth Avenue, New York 3

CHICAGO • DALLAS • MEMPHIS • PITTSBURGH • LOS ANGELES • BOSTON

Kans. PCA Holds Sales Clinic

For the first time in association history, a pest control group sponsored a two-day conference devoted entirely to better selling. The Kansas Termite & Pest Control Association held such a sales clinic, Jan. 12-13 at the Allis Hotel in Wichita in cooperation with the School of Business, Kansas University.

Bertram L. Trillick, professor of marketing at the B-School, was keynote speaker the first day. He talked on "Sales Anatomy," "Sales Motivation," "Handling Competition," and the "Canned Pitch."

Other sales experts appearing on the Tuesday, Jan. 12th program were Robert B. Peele, director for Stauffer Publications, Topeka, who talked on "Selling the Interview;" Clair Williams of Metropolitan Life Insurance, covering "Objections" or "Excuses;" Dr. Robert Hamilton, head psychologist for Boeing Aircraft Corp., who explained the principles of sales psychology; and Vince Rocereto, executive vice president of American Home Life Insurance Co., who spoke on handling objections. Banquet speaker was Byron Kenyon of Kenyon-Thomas Advertising Agency. His topic was "Face to Face Selling."

Second-day topics and speakers were: Centers of Influence and "Bird Dogs," by Paul Jernigan, president Wichita Chamber of Commerce; telephone selling, by Bill Wimsatt of Southwestern Bell Telephone Co; "Boners" that kill sales, by Neil Kottler, manager and purchasing agent for Associated Grocers in Wichita; legal aspects of selling, by attorney and president John Callahan of Guaranty Title & Abstract Co; what about "Closing"? by Bently Barnabas, president of

Personnel Research Institute; and objective establishment and sales planning by Marvin B. Small, sales manager of Beech Aircraft Corp. Fred New, chairman of the NPCA's accounting committee, spoke on uniform accounting systems and sales analysis.

The association's annual business meeting was held late in the afternoon of the first day.

Pasadena Passes Ordinance

A new ordinance regulating the work of PCOs in Pasadena, Calif., was passed late in December.

Firms and individuals will be required to obtain licenses, to pass tests, if they have been operating for less than two years, and to carry liability insurance. The ordinance set up a six-member commission to be appointed by the mayor. It will consist of three PCOs, the fire chief who will be commission chairman, and two other persons.

The law, patterned to some degree after ones in Houston and La Porte, Texas, was requested by Pasadena PCOs to stamp out "fly by night" operators, according to industry members in that California city.

Dusts Exempt from Okla. Law

"Low acute toxicity tracking dusts shall be exempted . . ." from the new Pesticide Regulations passed late last year by the Oklahoma State Board of Agriculture, according to an official release just received. All other pesticides must be used in accordance with the new regulations.

Every container of pesticides used in insect or rodent control work by Oklahoma licensed structural PCOs shall have attached to said container a readable label listing the active ingredient or ingredients and a recognized antidote, the rules state.

Further stipulations are:

"Only pesticides approved by the Oklahoma State Board of Agriculture or suggested by government agencies, recognized scientific, or pest control organizations, unless in long-established use industry-wide, shall be used in structural pest control within the State of Oklahoma except that experimental chemicals may be used, in limited amounts, at the approval of the Oklahoma Board of Agriculture or if a part of a testing program of a govern-

WEED & GRASS KILLER

This small amount kills over 50 square feet of weeds and grass!

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Kills all vegetation! Stops new growth! A combination of proven weed and grass killing chemicals. No mixing . . . the dry pellets are ready to apply with mechanical spreader or by hand. If you offer weed control service, you will want Chlorea Granular for its easy use, low dosage rate and powerful kill. Apply early for best results.

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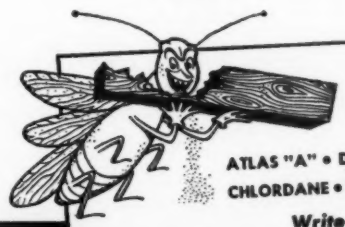

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The most popular bit in the termite control industry. Heat treated, alloy steel with *Fast* spiral flutes to quickly clean out cuttings . . . you drill more holes — faster. Available in 3/16" to 1 1/2" diameters — lengths up to 36".

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For those who prefer an open flute design. High-capacity spiral grooves efficiently remove cuttings . . . prevent binding or clogging. Available in 3/16" to 1/2" diameters — lengths up to 6'.

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For hard-to-drill concrete, stone or any masonry — this rugged, dependable bit is designed for use in Electric or Pneumatic Hammers. Fast, positive two-way dust removal. PCO'S report Thunder-twist outdrills steel star drills as high as 100 to 1. Available in 3/16" to 1" diameters — lengths up to 18".

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ment agency, or recognized scientific, or pest control organization.

"Non-gaseous pesticides must be used in such a manner as to preclude direct contact with food or feed unless such use is a suggestion of a government agency or recognized scientific or pest control organization.

"Pesticides shall be used in such a manner as to preclude direct contact with cooking utensils or food preparation surfaces unless a warning in writing is left in a prominent place on the premises treated, that the utensils or surfaces shall be washed before using.

"No pesticides used for control of fabric insects shall be applied to wearing apparel, bedding, furniture upholstering, drapes, rugs, or carpets if pesticides contain arsenic in any form.

"Thallium sulphate shall be used only in a locked rodent bait box unless used in attics and under floors of buildings.

"Rodenticides shall be placed in suitable containers and concealed where irresponsible humans are not apt to have access to them. When rodenticides are placed above floor level, extreme caution must be exercised to preclude the possibility of accidental upset."

For further information on rules and regulations governing pest control operations in Oklahoma, write the Oklahoma State Board of Agriculture, Division of Entomology, Capitol Building, Room 122, Oklahoma City.

San Antonio Numbers PCOs

The city of San Antonio, Texas, has assigned numbers to PCOs for the year 1960. An amended ordinance requires pest control firms to display an assigned number on the front door of vehicles as a means of identification.

Penick Branch Marks 25 Yrs.

S. B. Penick & Co. recently celebrated the Silver Anniversary of its Chicago branch office. Established in 1934 by Harold A. Meyer, a Penick vice-president, the branch services the area with complete stocks of its three divisions: Botanical & Allied Products Division, New York Quinine Chemical Division, and Farm Chemical & Insecticide Division.

In charge of the branch since 1946 has been Ralph A. Olson, also a Penick vice-president.

Calendar

Eastern Div. Pennsylvania Pest Control Assn. Monthly Meeting, Sylvania Hotel, Philadelphia, Feb. 11, 6:30 p.m.

Epidemiology and Control of Vector-Borne Diseases, Training Course No. 201, Communicable Disease Center, Atlanta, Ga., Feb. 15-19.

New Jersey Pest Control Assn. Monthly Meeting, Entomology Bldg., Rutgers University, New Brunswick, Feb. 17, 8 p.m.

Weed Society of America and Western Weed Control Conference, Cosmopolitan Hotel, Denver, Colo., Feb. 22-25.

Va. Mosquito Control Assn. Annual Meeting, Moose Hall, Portsmouth, Feb. 23.

Pacific Northwest PCO Conference, Benjamin Franklin Hotel, Seattle, Wash., Feb. 28-Mar. 2.

Penna. PCO Conference, Penn State University, University Park, Mar. 1-2, 1 p.m.

Arkansas PCO Licensing Exam., Dept. of Entomology, College of Agriculture, Fayetteville, Mar. 7, 1 p.m.

Illinois Mosquito Control Assn. Conference, Orlando Hotel, Decatur, Mar. 7-8.

Western Div. Penna. Pest Control Assn. Monthly Meeting, Webster Hall Hotel, Pittsburgh, Mar. 10, 6:30 p.m.

Alabama PCO Licensing Exam., 1308 1st Ave., N., Birmingham; Courthouse, Gadsden; A.P.I. Ornamental Hort. Field Sta., Mobile; 882 State Office Bldg., Montgomery; Courthouse (see bulletin board) Decatur, Mar. 15, 8:30 a.m.

N. J. Mosquito Extermination Assn. Convention, Chalfonte - Haddon Hall, Atlantic City, Mar. 16-18.

16th Annual American Mosquito Assn. Meeting, Hotel Somerset, Boston, Mass., Mar. 27-30.

Oklahoma PCO Licensing Exam, Capitol Bldg., Room 122, Oklahoma City, Apr. 7.

Eastern Div. Penna. Pest Control Assn. Monthly Meeting, Sylvania Hotel, Philadelphia, Apr. 14, 6:30 p.m.

Florida Anti-Mosquito Assn. Convention, Hillsboro Hotel, Tampa, Apr. 24-27.

Chemical Specialties Manufacturers Assn. 46th Mid-Year Meeting, Drake Hotel, Chicago, May 16-18.

National Sanitary Supply Assn. 37th Annual Convention, Fountainebleau Hotel, Miami Beach, Fla., May 22-25.

Insect and Rodent Control Training Course No. 221, Communicable Disease Center, Atlanta, Ga., June 6-17.

National Pest Control Assn. 27th Annual Convention and Trade Show, Mayo Hotel, Tulsa, Okla., Oct. 16-20.

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SPRINGTAILS . . . Description, manner of infesting dwellings, chemical control.

COCKROACHES . . . Types, sprays, dusts and powders, baits, other methods of control.

CRICKETS . . . Crickets as pests and their control.

EARWIGS . . . History and habits, recognition of damage, control.

TERMITES . . . Different species, food, reproduction, types of damage, control through pesticides, sanitation, structural design.

DECAY FUNGI . . . Recognition of damage, control, treatment of structural timbers.

WOOD BORING, BOOK BORING BEETLES . . . Tabulation of common household and industrial beetles, recognition of infestation, methods of control.

BOOK LICE . . . Description, life history and methods of control.

BEDBUGS . . . Occurrence, types, appearance, control.

CLOTHES MOTHS . . . Food, reproduction, types of damage, prevention of infestation, control.

HIDE AND CARPET BEETLES . . . Types, life history, methods of control.

ANTS . . . Anatomy, castes, control of various types.

BEES AND WASPS . . . Beneficial aspects, types and methods of control.

STORED PRODUCT PESTS . . . Recognizing infestation, pests of dried foods, grains, meat and fruits, methods of preventing infestation and control.

LICE . . . Types, methods of infestation and control.

FLEAS . . . Life history and habits, natural enemies, sanitation and control.

FLIES, GNATS AND MOSQUITOES . . . Habits, effectiveness of insecticides and larvicides, measures of controlling breeding, other control.

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3 GALLON STAINLESS STEEL SPRAYER

Inner seal lid cover removes for easy filling, easy cleaning. Built for professional pest control. Equipped with chemical and oil resistant hose, washers, gaskets, throughout.

Fan pattern nozzle, superior shut-off valve, 18" aluminum wand, web strap. Special safety valve in Tee Handle pump prevents over-inflation. Shipping weight 11 lbs.

1 GALLON STAINLESS STEEL SPRAYER

Holds a full gallon. Top inlets, inner-seal lid cover and discharge equipment are the same as the Three Gallon SS Sprayer above, except aluminum wand is 9". Outstanding quality. Convenient size. Shipping weight 10 lbs.

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Chrome finished all brass tank. Has top-mounted easy-to-read pressure gauge with unbreakable crystal. Easy top fill. Check valve prevents dripping or accidental discharge when extension is removed. ALL MECHANICAL SEALS WITH OIL AND CHEMICAL RESISTANT RINGS. Shipping wt. 7 lbs.

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Employee Benefits

(from page 20)

"2. An employee whose service in the capacity of a juror makes it impossible or impractical for him to work shall be paid the difference between jury duty pay received and normal weekly earnings. The Company agrees to pay such amount upon presentation of due proof by the employee.

"3. The Company will pay a bonus of 10% on the amount of dollar volume of service work performed by an employee in excess of $1,200.00 in any one month. These bonuses will be paid after the determination is made for the current month. The Company shall also pay commission to employees on leads resulting in sales obtained or turned in to the office by employees. Such commission shall be payable upon receipt of the first payment from the customer. In the event, however, that the customer fails to maintain the account for a period of six months, the employee shall refund the commission received on such account. The practice of employees taking company trucks home at night shall be understood to be at the request and direction of the Company only.

"4. All employees shall be entitled to five days sick leave with pay with the understanding that if sickness endures for two days a doctor's certificate certifying to the illness of the employee shall be submitted to the Company upon the employee's return to work.

"5. After a 90-day waiting period, an employee will be covered by the Blue Cross and Blue Shield Hospitalization Plans, the cost of which will be paid by the Company. Make your application for coverage at the office just prior to expiration of the 90-day waiting period."

Aireactor Introduces DDG

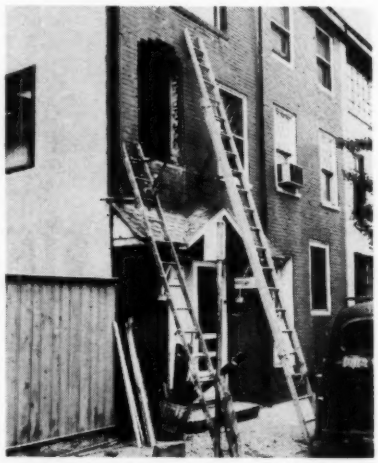
A combined deodorizer, detergent and germicide make up the new Aireactor DDG according to its manufacturer, Aireactor Corp., 271 Madison Ave., New York 16, N.Y.

It is claimed the product has germicidal properties that kill Staphylococcus disease bearing organisms wherever they are deposited. It is said to be non-toxic, non-inflammable and noncorrosive and can be safely used on practically all surfaces.

Two ounces of Aireactor DDG per gallon of water can be used to clean floors, walls, bowls, windows, food utensils, garbage cans, etc. For more information, write the manufacturer.

Notebook

TIPS AND IDEAS FROM THE FIELD



Philadelphia rowhouse where termites infested second story window frame without ground contact.

Exposed Second Floor Termites in Foto Studio

by Martin T. Meyer

Theodore Meyer, Inc.
Philadelphia, Pennsylvania

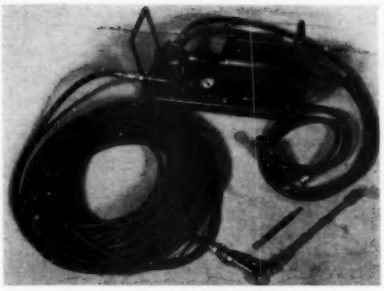
Recently we had a termite call from the owner of a 100-year old rowhouse in central Philadelphia that had been converted into a photographic studio. Subterranean termites had invaded a window frame on the second floor, front, but investigation of the premises failed to turn up any sign of structural termite activity below the window frame.

We were at a loss to explain the infestation's point of origin until removal of the window frame revealed the lintel was water-soaked. Apparently leaks had developed in the mortar between bricks in the front wall. Winged reproductives must then have found their way in. With the constant source of moisture, they became activated and did considerable damage to the window frame.

Treatment included replacement of the window frame and a recommendation to the owner that the mortar joints be repointed.

Termites Long lived

Termites are among the world's longest-lived insects. Queens in an artificial colony have lived for 25 years.



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Designed and built for Heavy-Duty spraying and pumping work with termites, beetle and yard treating work.

Pump as pictured is a Hypro-nylon-roller, nickel alloy pump, corrosion resistant, designed to handle oil or water base solutions. Its capacity is 5 gallons per minute with pressures from 65# to 150# per square inch, normal operating pressure 125#, electric powered by a ¾" HP, 60 cycle, 110 volt, single phase, heavy duty, Capacitor, Westinghouse motor with switch and cord; height 11", width 11", length 20"; weight (less discharge lines, 40#)

Unit ready to use: includes pressure gauge, hand operated pressure regulator, by-pass hose (to keep solution thoroughly agitated,) quick coupler for discharge hose, intake suction hose, strainer, 100 feet ⅜" ID 200# working pressure Neoprene discharge hose, Tri-con valve, 6" treating nozzle-solid stream, 9" wand and one tee jet fan type nozzle #8001.

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Dilute with Oil Only — Ground or Wood Preservative

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Please send me details of the "TOX-EOL SYSTEM" of termite control and price list.

Samples of W20 ☐, WO A-1 ☐, ALTOX ☐

Name _____

Street _____

City & State _____

New headquarters and 18 vehicles in first five years. That's the record of Texas Sanitation Co., Inc., of Victoria, Texas. Lester A. Meis, owner, is standing before the most recent addition to his concrete block building. Office space is tripled and a warehouse is now located in a different section of town. The black widow "wall" spider is 15 ft. high by 20 ft. long. Insects are multicolored against a white background and are illuminated to make an effective display at night. Below are pictured 16 of TSC's Bugmobile fleet. Meis first opened his doors for business in 1954.

Suppliers' Staff Changes

Michigan Chemical Corp., St. Louis, Mich., has appointed **E. Russell Leach** sales manager, and has made **Max R. Sias** manager of sales administration. This is a promotion for both men who have been with the company for a number of years.

Hardie Manufacturing Co., Wilkes-Barre, Pa., has elected **Edward V. Melsha** its new president. He has been in charge of Hardie's operations since 1957. From 1950 to 1955, Mr. Melsha was president of Vulcan Iron Works, also of Wilkes-Barre.

Velsicol Chemical Corp., Chicago, has announced the appointment of **T. W. Brasfield,** as director of marketing, according to John F. Kirk, vice president. Mr. Brasfield comes to Velsicol from Naugatuck Chemical Division, U. S. Rubber Co., where he held a number of administrative positions including that of sales manager for agricultural chemicals.

Hercules Powder Co., Wilmington, Dela., has put **Donald F. Stauffer** in charge of its Naval Stores Department technical service and development work in Canada, according to a report from Richard T. Yates, the department's director of sales.

Amchem Products, Inc., Ambler, Pa., has made **Aubrey E. Sherman** its sales representative in Alberta and Saskatchewan. He was formerly district agriculturist in the Province of Alberta, Canada.

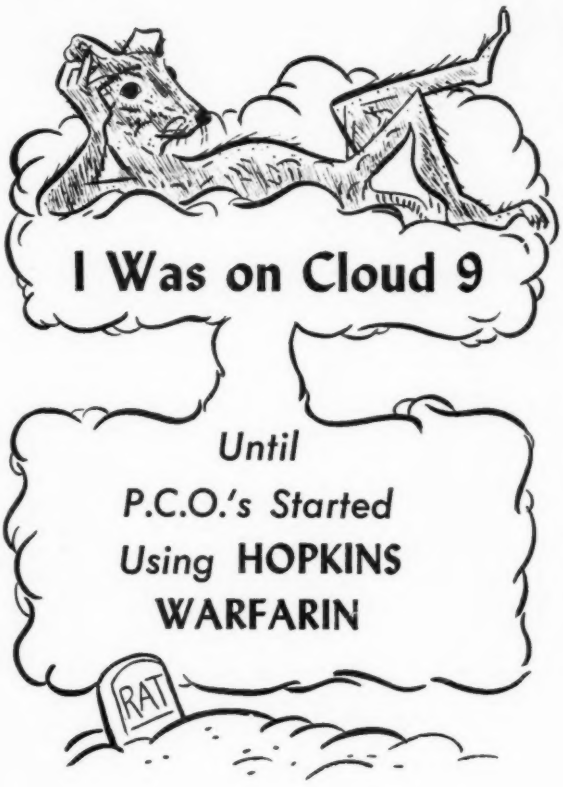
Actually Two Clover Mite Species Researchers Say

An announcement is expected soon from expert acarologists that there are actually two species of clover mites around homes and that control measures for one may not necessarily be effective for the other.

Work by U. S. mite authority, Dr. E. W. Baker, of the National Museum in Washington, D. C., and Canadian Cecil Morgan has begun to differentiate between various Bryobia. There appears to be a species which inhabits trees and one that lives in grasses.

Further details are expected to be given at the Purdue PCO Conference early this month. They will be reviewed in the March issue of PC, and as soon as a complete report on this significant work is made available, it will be published in PC.

Interior of E. L. Forde, Ltd., Fumiseal office, Honolulu. Probably the largest pest control company in our new State of Hawaii, is the one whose office is pictured here. Recorded "motivation" music is piped into this modern PCO plant. President Ernie Forde (center, talking on phone) says, "At times the pest control business can be a source of vexation and the music helps soothe. When we started the music, all the expressions on our people's faces changed. We now have a much happier outfit and thus feel the expense is warranted." The Forde company has an office staff of six, plus managers, salesmen, and servicemen. It performs all phases of general pest control, plus termite control, fumigation with or without tarps.



If you're "up in the air" over Rat Control problems you can bring them down to earth quick, with safe and sure Hopkins Warfarin Pellets.

HOPKINS WAFARIN PELLETS are used by leading P.C.O.'s the nation over because they reduce costly CALL BACK to a minimum. HOPKINS WARFARIN PELLETS are time tested and are tops for effective rodent control.

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AGRICULTURAL CHEMICAL CO.
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DEATH BY DEHYDRATION

TO Cockroaches - Fleas - Termites - Silverfish and many other insects

ADVANTAGES:

1. Long residual
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4. Effective under high humidity
5. Adheres to treated surfaces

Now available in 3 grades

SILIKIL L - 6 pounds per cubic foot
for attic application - drywood termites

SILIKIL - 12 pounds per cubic foot
heavy dust for P.C.O.s for inside work - roaches

SILIKIL D - 22 pounds per cubic foot
an extremely heavy silica for P.C.O.s

All Silica products are available with PYRENONE for quick knock-down
Convenient package sizes - 1, 5, 15 lb. containers

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New Weed Control Chemicals Reviewed At Weed Conference in New York Last Month

Expanded use of granular herbicides, pre- and post-emergence sprays, plastic mulches, and perfection of machines that can lay down mulch materials quickly and efficiently, made big news on the herbicide front in 1959. So delegates were told at the Northeastern Weed Control Conference held at the Hotel New Yorker, January 6-8.

"In instances where the complex of weeds is such that no one material is available that will prove adequate, combinations of herbicides are working out satisfactorily," M. W. Meadows of the Grange League Foundation, Ithaca, N.Y., reported.

"CIPC plus Randox at 6 lbs. active of each material has proven effective on the muck soils of New York State," he said.

The effectiveness and persistence in soil of certain herbicides was explained by Clayton M. Switzer and Wilfried E. Rauser, of the Department of Botany, Ontario Agricultural College, Guelph, Canada.

They said the rate at which the phytotoxic properties of an herbicide disappear from treated soil has been investigated and that it is apparent environmental conditions such as temperature, rainfall, soil type, and cultivation are involved.

Both Simazine and Atrazine have been shown to lose their toxicity at rates of 2 lbs. active per acre within 8 weeks under conditions of relatively high moisture and summer temperatures. Under dry conditions they remained as long as 12 months, the Canadians observed.

Urox appeared to be the most persistent of all herbicides studied. A rate of 10 lbs. per acre suppressed all growth throughout two growing seasons. Monuron was similar to Simazine in its rate of disappearance, with Diuron losing toxicity somewhat more quickly. Urab suppressed growth for four months after application, according to tests at Ontario Ag. College.

E. J. Rice and J. A. DeFrance, of the University of Rhode Island in Kingston, reminded delegates crabgrass has always been difficult to control. After several years of experimentation, these researchers found Phenyl Mercuric Acetate the most successful control for this weed.

For pre-emergence crabgrass control, R. G. Mower and J. F. Cornham of Cornell found that, among the arsenicals, calcium arsenate gave excellent control (98%) with no turf injury. Spring treatments were more effective than fall treatments. Of the new experimental products, Zytron appeared to be the most promising, they said.

DeFrance and P. M. Giordano, of Rhode Island U., said for chickweed control in lawn turf, the best and most consistent control was obtained with three materials they tested. They were: ammoniummethyl arsonate plus 2,4-D; ammomium methyl arsonate plus 2,4,5-TP; and ammonium methyl arsonate plus 2,4,5,-TP plus 2,4-D.

There was little deviation in the degree of control between these three materials and the turf was only slightly discolored by the treatments, they reported.

Further information and a copy of the conference proceedings

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by using and selling

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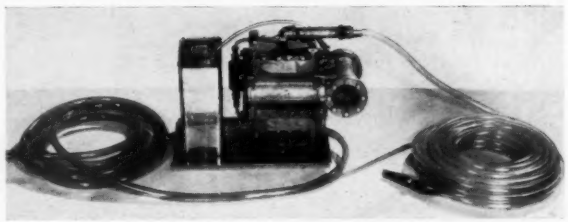
***New!* IDEAL SPRAYER for TERMITE SOIL TREATING**



The HYDROMOTOR Is A Complete Answer for Heavy or Light Spraying

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Portable—weighs only 38 lbs.
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Any emulsifiable insecticide may be used.
Costs nothing to operate — requires only water pressure.
Designed to last for years of every-day use.

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For Concrete-Termite Core-Style Drills over 1¼" diam.

lengths up to 36"

CHECK THESE ADVANTAGES:

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• Special grinding cutter penetrates faster with less pressure. • Extra thick cutter gives longer life, permits more re-grinding. • Double spiral worm removes pulverized material faster. • Diameters from 11/64" to 1½" . . . Standard lengths up to 24" in popular sizes.

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• Nitride-Hardened drill body extends dust-removing worm life up to 500% longer than drills that are not hardened • Multiple cutter design for smoother, faster drilling. • Carbide cutters have full steel backing support with special dust channels into worm for greater drilling effectiveness. • Diameters from 3/16" to 6" . . . Extra lengths up to 36". Interchangeable shanks for economy and convenience.

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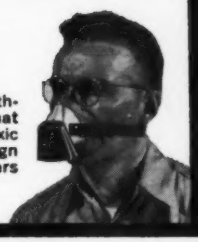

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may be obtained by writing Dr. D. A. Schallock, secretary-treasurer of the Northeastern Weed Control Conference, Rutgers University, New Brunswick, N.J. Price of the proceedings was not established at the time this issue went to press.

Ever-tightening governmental restrictions on the use of agricultural chemicals may seriously handicap the development of new pesticides, according to L. G. Utter, assistant manager of product development for Diamond Alkali Co., Painesville, Ohio, and 1959 president of the Weed Conference.

Utter declared many corporation executives are taking a jaunticed look at new chemicals brought in from their research laboratories, even those that show promise for controlling weeds, insects, or diseases of plants and animals.

E. M. Rahn, University of Delaware, was elected president of the Conference for 1960. L. Southwick, Bow Chemical Co., Midland, Mich., became the new vice president, and D. A. Shallock, of Rutgers, continues as secretary-treasurer.

The 1961 Conference will be held at the New Yorker Hotel in New York City, January 4-6.

Okla. OK's 19 Termiticides

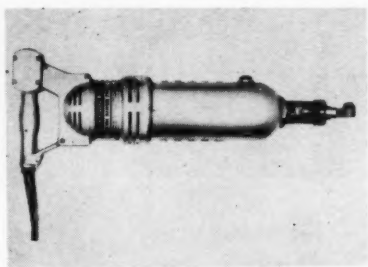
(from page 44)

monochlornaphthalene, sodium fluoride, dinitrophenol, sodium arsenate, DDT, ethylene dibromide, copper naphthenate, chlordane, dieldrin, and aldrin.

"Upon proper request the Board will grant to any licensed operator an 'experimental permit' for the testing and use of any new or unlisted chemical or method that offers promise in the field of termite control. The request for approval and permit shall be treated as restricted information, upon request of the applicant, so as to allow him ample time to collect data and perfect a patent, if applicable," the law states.

Zytron Is Promising Herbicide

Research at The Dow Chemical Co., Midland, Mich., has developed a new herbicide, called Zytron, that appears to have "unusual selectivity" and a "great deal of promise" for control of smooth crabgrass, common crabgrass, and certain other grassy weeds, Dow says.



Porter-Cable Kango electric hammers come in three new models being introduced by the Porter-Cable Machine Co., 117 Seneca Street, Syracuse, N.Y. They are self-contained and run on 110 volt current without need for converters or rectifiers, the manufacturer says. It is claimed Kango hammers can be used for chipping to remove individual bricks, digging clay, tamping cinders and wet cement, gouging wood, drilling masonry, breaking access holes through brick or concrete, and cutting holes in ceilings. The 25-60 cycle, AD-DC motor is designed with a "floating" armature that will withstand vibrations of the hammer blows, Porter-Cable reports. Models have a drilling range from 3/16" to 3" and number of blows vary from 1300 to 1800 per minute depending upon the model chosen. Each is equipped with precision ball bearings and three conductor cords and has a wide selection of accessories. Complete information is available on the Kongo line from Porter-Cable.

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* T.M. Pat. Pend.

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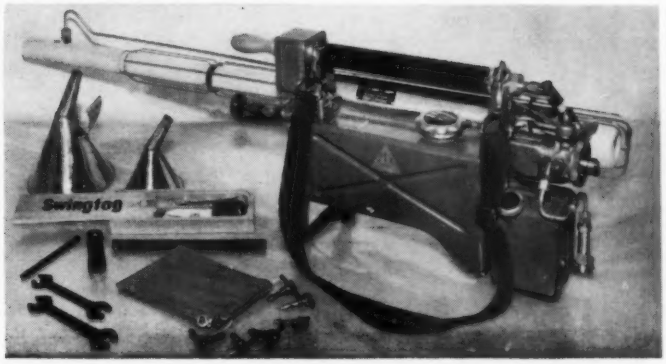

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1/8" thru 1/4"*	1.26	1.00	1.50
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3/8"*	1.40	1.05	1.55
7/16"	1.53	1.10	1.60
1/2"	1.73	1.15	1.65
5/8"	2.00	1.25	1.75
3/4"	2.40	1.50	2.00
7/8"	3.07	2.00	2.50
1"	3.74	2.25	2.75
1-1/8"	5.34	2.50	3.00
1-1/4"	6.67	2.75	3.25
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Sanitation Violators

Unlawful contamination of food and infestation of dwellings by insects and rodents is bringing seizures or condemnations by Federal, state and local enforcement authorities. Here are some of the latest violations and convictions.

Seven persons paid a total of $825 in fines in Municipal Term Court recently as New York City continues its campaign to get rid of rats and conditions that produce them. Six were fined $150 each and the seventh $75.

In other action, New York City courts levied fines totaling $6,190 against Upper Manhattan building operators charged with violations of the city's new Health Code because they permitted their properties to be continually rat infested.

New Disposable Lethalaires

The Lethalaire Division of Virginia Smelting Co., West Norfolk, Va., has just announced the introduction of two disposable bombs as additions to its line of 5 lb. and 30 lb. refillable bombs.

Lethalaire Throwaway Bombs come in a 5 lb. size (V-24) and a 2½ lb. (JR-4) size. The larger one is said to run continuously for over 55 minutes and treat 1,600,000 cubic feet. The Junior runs for 27 minutes and will treat 800,000 cubic feet, the company reports.

Formulation used in all these Lethalaire units is claimed to be harmless to human beings and safe to use.

Prentiss Has New Pyrethrum Extracter

A triple distillation pyrethrum extraction unit is now operating at Prentiss Drug & Chemical Co. (New York City) Newark, N. J. plant. It is said to be capable of producing 20% high-grade colorless pyrethrum extract.

The unit, first to be installed in this country, was built by Prentiss on a license arrangement with Cooper, McDougald, & Robertson, Ltd., Berkhamsted, Herts, England, developer of the process.

Advantage of the unit is said to be that it carefully distills raw pyrethrum extract, a heat sensitive material, without destroying its active insecticidal ingredients.

The raw extract, taken from pyrethrum flowers grown in Kenya and the Congo, is introduced into the distillation as a pitch-like flowing substance just as it comes from Africa. By a carefully controlled, three-stage process, a purefied concentrate can be obtained with no apparent loss in the product's ability to kill insects.

Pi Chi Picks Gerberg

Pi Chi Omega, fraternity of PCOs with college degrees in entomology, elected its new officers recently. Dr. Eugene J. Gerberg of Insect Control & Research in Baltimore, Md. was made president for 1960. New vice president is William L. Brehm of Philadelphia, and Myron W. Smith of Memphis is secretary-treasurer.

New John Bean Model 51 Rotomist is said to be a self-contained, compact, and economical air-type mist sprayer designed especially for mosquito control. Mounted on a 75-gal. tank, it is manually rotated through 360 degrees, pivoted at the center of the base on six 3" steel rollers. A 35 degree angle discharge head is available for spraying small to medium trees. Bean reports a special fuel oil injecting system emits smoke into the air stream to trace the spray pattern. Power is from a two cylinder, 13 hp air-cooled engine. Model 51 has a 21" axial-flow fan and Hypro pump producing 15 gpm at 150 psi, the manufacturer claims. For detailed information, write John Bean, Food Machinery & Chemical Corp., Lansing 4, Mich.

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Insecticidal Fog Generator

The DYNA-FOG "50" is primarily designed for indoor insecticidal fogging, but it is equally effective out-of-doors.

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- Effective — 6 gallons insecticide output per hour.
- Durable — built for dependable use day-in, day-out.
- Finger-tip insecticide output control gives extreme flexibility for varied applications.

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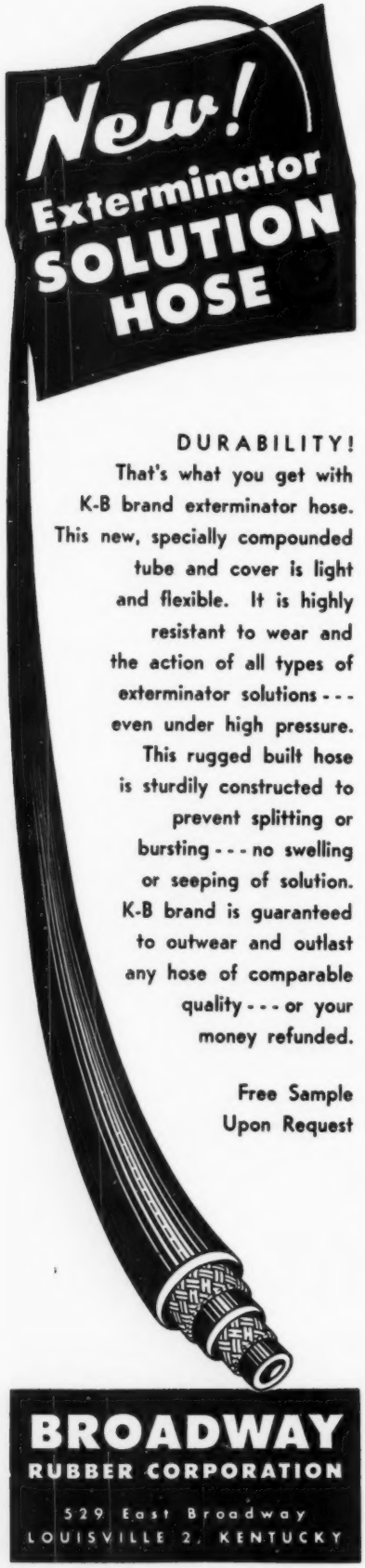
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Publications to write for . . .

Here are the latest government, university and association publications of interest to pest control operators. Some can be obtained free of charge, while others are nominally priced. When ordering, include title and catalog number, if any. Sources follow booklet titles.

In-Storage Treatments for the Protection of Farmers Stock Peanuts from Insect Damage—Exploratory Tests. Marketing Research Report No. 363. 1959. 31p. Superintendent of Documents, Government Printing Office, Washington 25, D.C. 20c.

The Peet-Grady Method., Rev. 1959. 4p. Chemical Specialties Manufacturers Assn., 50 E. 41st St., New York 17, N. Y.

Insecticides for the Control of Insect-Borne Diseases. Reprint No. 265. 1959. 2p. Technical Development Laboratories, Communicable Disease Center, P.O. Box 769, Savannah, Ga.

Tests with Malathion and Methoxychlor Protective Treatments for Shelled Corn Stored in Metal Bins in the Southeast. Marketing Research Report No. 357. 1959. 11p. Superintendent of Documents, Government Printing Office, Washington 25, D.C. 10c.

Soil Treatment, An Aid in Termite Control. Catalog No. A 1.35:324/3. Rev. 1959. 7p. il. Superintendent of Documents, Government Printing Office, Washington 25, D.C. 5c.

Laboratory Studies of Five Anticoagulant Rodenticides. Reprint No. 255. 1959. 9p. Technical Development Laboratories, Communicable Disease Center, P.O. Box 769, Savannah, Ga.

Insect Infestation as a Factor in Storing Farmers Stock Peanuts Grown in Georgia. Marketing Research Report No. 364. 1959. 39p. Superintendent of Documents, Government Printing Office, Washington 25, D.C. 15c.

The FHA Story in Summary, 1934-1959. Catalog No. HH 2.2:F 31/3. Superintendent of Documents, Government Printing Office, Washington 25, D.C. 20c.

Residual Fumigants—Their Potential in Malaria Eradication. Reprint No. 263. 1959. 3p. Technical Development Laboratories, Communicable Disease Center, P.O. Box 769, Savannah, Ga.

Mosquitoes of Medical Importance. Catalog No. A 1.76:152 1959. 158p. il. Superintendent of Documents, Government Printing Office, Washington 25, D.C. $2.50.

A Semiautomatic Liquid Fly Bait Dispenser. Reprint No. 274. 1959. 2p. Technical Development Laboratories, Communicable Disease Center, P.O. Box 769, Savannah, Ga.

How to Control Bed Bugs. Catalog No. A 1.35:453 Rev. 1959. 7p. il. Superintendent of Documents, Government Printing Office, Washington 25, D.C. 5c.

Dilan Formulations for Adult House Fly Control. Reprint No. 275. 1959. 1p. Technical Development Laboratories, Communicable Disease Center, P.O. Box 769, Savannah, Ga.

The Effectiveness of Ronnel as a Cord Impregnant for House Fly Control. Reprint No. 276. 1959. 2p. Technical Development Laboratories, Communicable Disease Center, P.O. Box 769, Savannah, Ga.

Cornell Sees Woodchucks As Threat to Fence Posts

Gnawing animals are believed responsible for causing damage to certain types of fence posts on experimental sites in Cornell's Arnot Forest. Scientists at State College for Agriculture, at Cornell University, Ithaca, N. Y., where various chemical preservatives are being tested on over 450 fence posts of different wood types, point their finger at woodchucks as the guilty culprits. Aim of the project is to give New York State farmers a good wood preservative, so old fence posts won't have to be replaced annually.

Only posts treated with two toxic salt preservatives, osmosalts and a combination of sodium hydroxide and copper sulfate, have received extensive damage by the woodchucks. Cornell Prof. L. S. Hamilton believes that chemical salts in the preservatives, or the woodchuck's "salt hunger," don't entirely account for the damage. He explained that some treated woods escaped damage, including beech, yellow birch, red maple, white ash, and red oak.

However, experiment results show that out of ten posts of each wood type, the animals gnawed one sugar maple, one black cherry, three hemlocks, five European larches, six basswoods, six trembling aspens, seven American elms, and nine red pines. Incidence of damage was the same on varying types of soil including poorly drained areas where woodchucks are not normally found.

Hamilton noted that further evidence may show that this is only a temporary local problem. For insurance, Cornell advises use of only durable woods or those treated with toxic oils such as creosote, pentachlorophenol, or copper naphthenate in areas where woodchucks exist.

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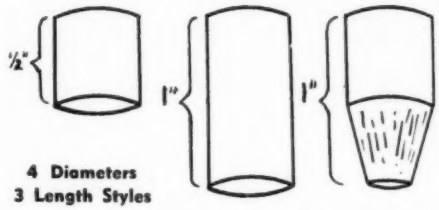

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¾"	12.00 M	20.00 M	23.00 M

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- Valve Rod and chemical tube are of non-corrosive stainless steel.
- Contains no aluminum or other parts which can pit, rust, corrode or deteriorate.

* FIELD - TESTED ON THE JOB FOR 4 MONTHS — Six B & G "BAN-DRIP" GUNS were tested in actual on - the - job operations, a total of over 16,000 continuous tests. Not a single drip occurred, and not a single replacement was necessary.

B&G COMPANY

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2640 Myrtle Springs Rd. — **Dallas 20, Texas**

Infestation Report

Contains pertinent portions of the Department of Agriculture's Cooperative Economic Insect Report, material from university entomology departments and reports from readers. PCOs noticing infestations in their own areas are urged to communicate with Pest Control so their information may be added to this infestation report.

ANGOUMOIS GRAIN MOTH
(Sitotroga cerealella)

Texas: Medium infestation in 2,000 bushels of stored grain in Fayette County.

IMPORTED FIRE ANT
(Solenopsis saevissima richteri)

Georgia: Infestations found for first time in Newton County, and in **Mississippi's** Franklin County.

BED BUG
(Cimex lectularius)

Texas: Annoying residents in Bryan.

BLACK WIDOW SPIDER
(Latrodectus mactans)

Utah: Causing concern to homeowners at Provo, Springville, and Spanish Fork.

A SHIELD BEARER CRICKET
(Platycleis tessellata)

California: Specimens collected in July and reported as abundant in the Timbuctoo area of Yuba County. This is the first record in this county.

DRUG STORE BEETLE
(Stegobium paniceum)

California: A heavy infestation in wheat flour from San Diego.

ELM LEAF BEETLE
(Galerucella xanthomelaena)

Oklahoma: Invading many homes in central and eastern areas, causing concern by their presence. A few to several dozen adults found overwintering in garages in Payne County.

A FLOUR BEETLE
(Tribolium destructor)

California: Heavy populations of adults in a warehouse in San Francisco.

LESSER GRAIN BORER
(Rhyzopertha dominica)

Oregon: Light to moderate infestations found in stored barley in a mill in northwest Portland.

CLOVER MITE
(Bryobia praetiosa)

Utah: Entering dozens of homes in Salt Lake City area and elsewhere in Salt Lake County.

A BROWN-DOTTED CLOTHES MOTH
(Acedes fusipunctella)

California: Heavy adult population in a house in Potrero, San Diego County.

OLD HOUSE BORER
(Hylotrupes bajulus)

Virginia: Damaging floor joists in a home in Henry County.

RED FLOUR BEETLE
(Tribolium castaneum)

North Carolina: Causing retailers to return large numbers of blankets to factory because pests were packaged with blankets in plastic shipping bags in Forsyth County. **Texas:** Annoying residents and attacking foodstuff in Comanche County.

RICE WEEVIL
(Sitophilus oryza)

Texas: Medium infestations in 2,000 bushels of stored grain in Fayette County.

Designs Own Termite Truck

(from page 30)

the back and each side. On the doors, a cartoon illustration pictures a house with a termite approaching.

American's termite truck has also appeared as the Muncie Central High Senior Class' entry in their annual Field Day Parade. Seniors fully bedecked it with junior and sophomore males carrying placards that pronounced their lowly status, making the underclassmen equal to such undesirables as rats, roaches, termites, etc., etc.

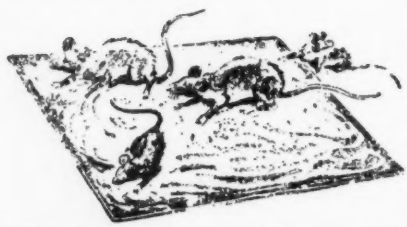
On the practical side, Gause's tailor-made termite service truck has served him well by speeding up performance, cutting costs, and adding to his reputation as a progressive PCO in Muncie.

Dawson Firm Changes Name

J. Carl Dawson & Associates, St. Louis, Mo. sanitation consultants, has changed its name to Armstrong, Stanley & Associates.

Archie E. Armstrong, who has served as executive director of J. Carl Dawson & Associates, will continue in the same capacity in the new firm.

WONDER RAT BOARDS



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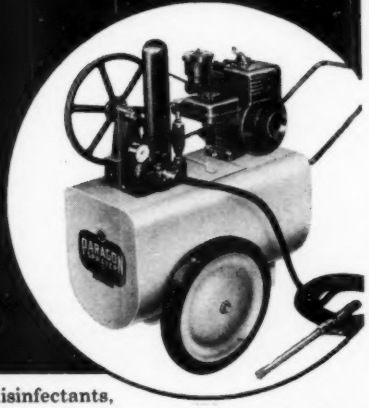

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Book Review

The Scientific Principles of Crop Protection

by Hubert Martin. St. Martin's Press, Inc., 103 Park Ave., New York 17, N. Y. 1959. 359 pp. $12.50.

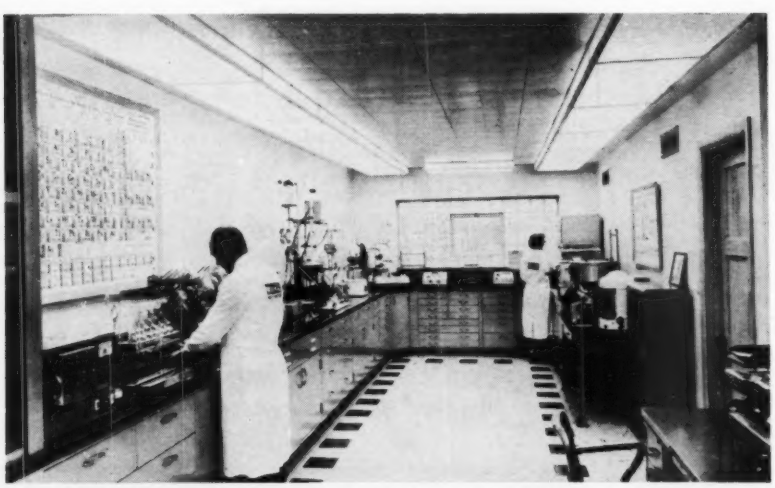
During the years that have elapsed since the previous edition of Dr. Martin's book in 1940, the search for synthetic pesticides by the chemical manufacturer has met "astounding" success, and the range of chemicals available for crop protection has been "vastly" extended, Dr. Martin writes in the preface of this new edition.

Mainly a broad, technical study of the biochemistry and toxicology of these new—as well as older — agricultural pesticides, this latest edition covers chiefly the chemistry and action of fungicides, inorganic compounds, naturally-occurring contact insecticides, synthetic contact insecticides, weedkillers, and fumigants. Other chapters, are devoted to biological control, soil treatment, seed treatment, plant resistance to insects, and the influence of external factors on the susceptibility and liability of the plant to attack.

Also included in the book is a special author index, as well as a subject index.

Dr. Martin is the director of Canada's Science Service Laboratory in London, Ontario. His first three editions of this book, published under the title "The Scientific Principles of Plant Protection," came out in 1928, 1936, and 1940. After its third edition, the volume was reprinted in 1944 and 1948.

Oklahoma PCA fair booth shines despite rain. Even though there were very heavy rains all during the four days of the Tulsa State Fair last fall, attendance was still 567,000. Members of the Oklahoma Pest Control Association, which sponsored the booth pictured above, felt well repaid for interest in their exhibit was high. At the left is a Tel-Vue continuous slide projector that ran 12 hours a day showing insect slides. Velsicol Chemical Corp.'s termite movie on pretreating was shown at 30-minute intervals. The association plans to exhibit at the fair again this year, according to its publicity man, J. Earl Griffin, Tulsa PCO.



Wil-Kil's food analysis laboratory is one of three in the United States and the only one operated by a PCO in Wisconsin. Located on the second floor of Henry Turrie's company building, here laboratory tests are made of raw materials as well as finished products. Technicians detect product contamination by insects, rodents, and filth, and determine whether or not finished products conform to commercial and legal requirements. For on-the-spot emergency investigations, Wil-Kil Pest Control Co. of Milwaukee also has a portable mobile laboratory.

Primer

By Any Other Name: Two

Do you have a difficult time remembering the technical names of insects? If so, here's another matching list that will enable you to rate yourself on your terminology know-how. This month wood destroying insects are featured. Simply re-arrange the two lists below so the common name of the insect and its technical name are side by side. For some of you that are well acquainted with the business this may be easy. Those relatively new, however, will have a more difficult time.

Match-up the numbers with the letters.

1. *Reticulitermes hesperus*
2. *Lyctus planicolles*
3. *Reticulitermes flavipes*
4. *Hylotrupes bajulus*
5. *Sirex cyaneus*
6. *Camponotus herculeanus pennsylvanicus*
7. *Scobicia declivis*
8. *Xestobium rufovillosum*
9. *Anobium puntatum*
10. *Kalotermes minor*
11. *Xylocopa virginica*
12. *Nacerdes melanura*

__A. Eastern subterranean termite
__B. Western subterranean termite
__C. Carpenter Bee
__D. Black carpenter ant
__E. Furniture beetle
__F. Deathwatch beetle
__G. Drywood termite
__H. A powder-post beetle
__I. Lead cable borer
__J. Wharf borer
__K. Blue horntail
__L. Old house borer

Answers on page 68

Next Month

1960 CDC Pesticide Suggestions

PCO Conference Reports

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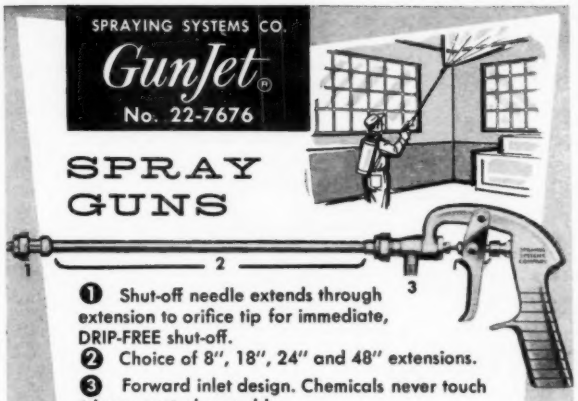

❶ Shut-off needle extends through extension to orifice tip for immediate, DRIP-FREE shut-off.
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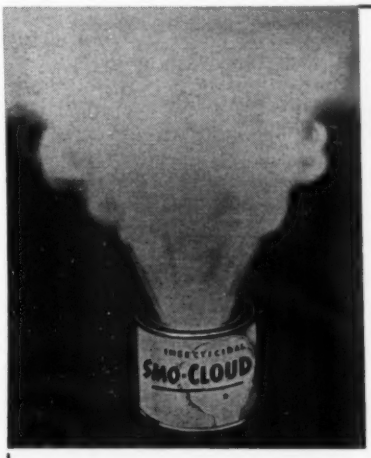

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HAVE CAR, will travel. P/C salesman, 9 years experience with large company, selling to management companies, factories, office buildings, stores, restaurants, hospitals, etc. wants change due to lack of opportunity. Married, age 43. Reply Box 520, Pest Control magazine.

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SALES REPRESENTATIVE for Middle Atlantic States to call on Pest Control Operators and Formulators, wanted by established East Coast house. Replies treated in strictest confidence. Box 523, Pest Control magazine.

FOR SALE

LONG ESTABLISHED general pest control firm in South, gross approx. $25,000 per year with $50,000 potential this year. Will sell for $17,000. Terms $5,000 cash, balance $2,000 per year. Would consider profit sharing arrangement for experienced, high caliber young man, with stock purchase option. Present management will remain with Company on part-time basis. Box 521, Pest Control magazine.

FOUR BIRD-E-VICT machines, tapes for starlings and pigeons, two machines new, two used, original cost $2,500.00; will sell for $1,000.00. New York State Exterminating Co., Inc., Box 81, Buffalo 14, New York.

WANT TO BUY

WILL PAY TOP PRICE for exterminating business in New York City area. Cash. Replies confidential. Box 439, Pest Control magazine.

MONTHLY PEST CONTROL accounts wanted in area of Monterey Park, Calif. J. Mechling, 771 Divina Vista, Monterey Park, Calif.

SAN DIEGO AREA: Interested in buying pest control business, route or routes, in San Diego area. Reply to Box 522, Pest Control magazine.

Combines Shields - Pretreat; Avoids FHA Warranty Clause

Dempsey R. Sapp, Florida Pest Control and Chemical Co., Gainesville, has devised a way to eliminate the necessity of builders providing the five-year warranty required by the FHA's Minimum Property Standards when they buy his soil treating service to protect homes under construction from termite attack.

Builders don't want the responsibility associated with the pretreat guarantee; they look to the termite operator, Sapp observes. So, he pretreats and issues a one year warranty with an optional service policy. To satisfy the FHA, the builder installs termite shields.

"We all know shields are relatively ineffective, but they're cheap to install," this Florida TO reasons.

The shield-pretreat combination means the builder is complying with FHA and the customer actually gets the kind of long-lasting protection he wants.

The method has had builder acceptance in Sapp's area. He reports 90% of the homes now built in and around Gainesville are pretreated.

Answers to By Any Other Name on Page 66

1. B; **2.** H; **3.** A; **4.** L; **5.** K; **6.** D; **7.** I; **8.** F; **9.** E; **10.** G; **11.** C; **12.** J.

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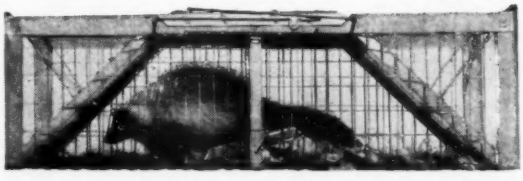

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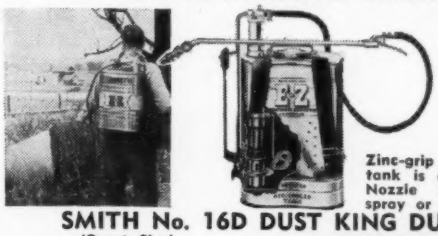

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Pestales

Opportunity knocks in Lithuania. Woodtreat's technical director, Ira Hatfield, passed on a report originating from Moscow that Justas I. Paleckis, president of the Lithuanian Soviet republic recently proposed a sort of voluntary militia to act as sanitary and cleanup brigades. "Despite advances in chemistry, the present age has failed to destroy cockroaches, flies, mice, and rats that infest villages," he said in an article prominently displayed in Izvestia. Tired of working your route in the USA? Here's a foreign opportunity for venturesome PCOs.

Pigskin greenery. Sunny Texas likes to do everything up brown, except for the show it puts on at the Cotton Bowl New Year's Day. Brown, burned up grass on the playing field hardly gives a perfect setting to the South's famous gridiron game. For the Jan. 1, '60 contest between Syracuse and Texas, Herbert A. Burnett of Burnett Exterminating Co., Dallas, came to the rescue. He sprayed the entire parched field with a green dye. The resultant lush verdant battleground was a beautiful sight to behold, we're told.

* * *

Mighty mouse minces muscle men. Members of a weightlifting club in England, that call themselves The Samsons, are being evicted by mice that invade their work-out room. So far the mice have proved stronger than the weight-hoisters since every attempt made by the club (except calling a PCO, of course) has failed to get rid of the critters. Commented the club founder, "Isn't it funny . . . when you're lifting a heavy weight, the very last thing you want is a mouse running up your leg." Agreed! Agreed!

* * *

Too late for changes. Arnold Mallis is working feverishly reading proofs for the revised printing of the second edition of his widely sought after and read, "Handbook of Pest Control." The difficulty with re-writing such a work is to keep up with new developments, but it's too late now to make any more changes. The book's going to press soon and copies will be available from PC about Feb. 15. First printing sold out so fast many readers were unable to obtain a copy.

* * *

"Quick" sand for PCO. Jacques Hess, of Exterminating Services Corp. in New York City, tells how a Manhattan haberdasher used his window display as a silent detective to check up on his monthly pest control service. He spread sand smoothly on the window floor for a beach wear scene and next morning it showed traces of little mouse tracks made overnight. The PCO was called pronto. No recurrences noted since. Jacques ASSURES us HIS firm was not involved.

* * *

Not too late. You're never too old, Pittsburgh's PCOs are boasting these days. Seems one of their members, Edward W. Blausen, who runs Challenge Exterminators in the Steel City, celebrated his 52nd birthday recently and not long afterward became the proud father of a baby boy, Edward, Jr. The Pittsburghers really have some stepping to do to match that kind of competition.

* * *

What would FDA say? From the "South African Medical Journal" comes a proposal that "social spiders" *(Stegodyphus mimosanum)* (pardon us, but we know of no one who'd want ANY spider as a "social" guest) be used to control flies in markets, restaurants, milk bars, kitchens, and latrines! The recommendation is made because flies are resistant to insecticides and not to social spiders. Wonder how long markets, eateries, etc., etc. could stay in business if their customers had to share space with these arachnid PCOs. And, how would Food & Drug inspectors look upon such goings on? But then, maybe they don't have to worry about these things in South Africa.

* * *

Friendship year. Part of the Greater Chesapeake Pest Control Club's annual Christmas party is a "friendship hour," but from the way PCOs took part in the games, fortune telling, and gift exchange, looks like there's enough good feeling to last the whole year. Dick Rottler, Cliff Cross, and Jim Archbell, are responsible for the Club's success this year. Hope the "Spirit of Christmas" doesn't get shattered by someone misfiguring his costs too low on an upcoming competitive termite job!

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Fairfield Strobane is available in concentrate form only for non-agricultural purposes.

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Formulations for virtually every type of insecticide product are contained in a comprehensive 20-page guide prepared by Fairfield Chemicals, Food Machinery and Chemical Corp., for entomologists, formulators, agricultural teachers, county agents, and others.

The Facts Finder includes use-tested sprays, powders, emulsions and aerosol insecticides for home, garden, factory, livestock, grain storage and food processing. Also included are Pyrenone and Crag(†) Fly Repellent Combinations.

The new Fairfield Facts Finder is fully illustrated, contains a pest identification table, performance charts, and has a unique revolving calculator that offers complete formulary data in an instant for 15 Pyrenone insecticide concentrates.

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Pyrenone's fast knockdown contributes to all residual sprays. Pyrenone Aerosol Concentrate 20-8 added to such residual toxicants as Diazinon, Dieldrin Malathion and Chlordane provides flushing action and knockdown effectiveness. When using residual sprays, customers demand quick action at the time of application and pyrethrins and piperonyl butoxide provide this response while spraying.

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Prepared for indoor use at a suggested dilution rate of one part concentrate and nine parts base oil, Fairfield Residual Concentrate No. 1 has a high knockdown rate because of its Pyrenone component. This factor also enhances its value in dealing with many resistant fly and roach strains. Its Malathion component is widely known for its effectiveness in residual roach control.

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Formulary data and suggested label information are included in a new, free technical bulletin F-16, available upon request.

*Reg. U.S. Pat. Off., FMC
**Reg. U.S. Pat. Off. Heyden Newport Chemical Corp.
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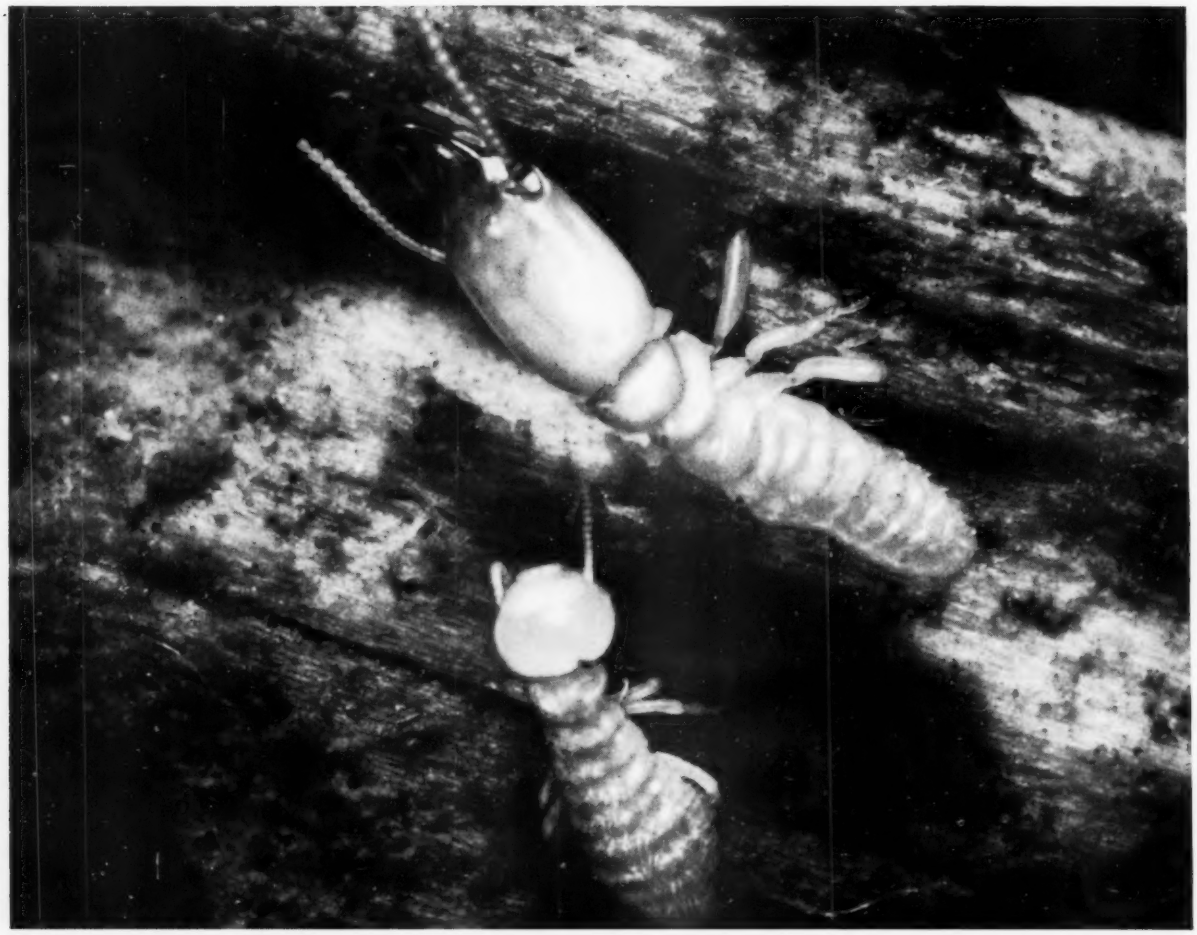

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